

T H E
R O Y A L G A U G E R ;
O R,

Gauging made Perfectly Easy,

As practised by the OFFICERS of his Majesty's Revenue of *Excise*. In *Two* Parts.

P A R T I.

Contains the *practical* Methods of finding the *Areas* and *Contents* of such *Superficies* and *Solids*, as occur in Gauging :

Also the *Established* Rules for finding the *Contents* of ALL SORTS of *Cisterns*, *Coppers*, *Backs*, &c. and *Casks*, when full, or *Part empty*.

The Examples are here performed both by the

P E N A N D S L I D I N G R U L E,

In *Ale*, *Beer*, *Wine*, and *Malt* ; also *Soap*, *Starch*, *Candles*, *Hops*, *Coffee*,
Tea, *Chocolate*, *Leather*, *Paper*, &c.

With the *Officer's* Duty in all Branches of the Revenue.

P A R T II.

Shewing the proper Method to be taken for obtaining
Employment in the *Excise*, with *authentic* Forms of such *Certificates*,
Petitions, *Oaths*, &c. as are requisite for that Purpose.

Together with

Necessary Directions for the *Officer's* Conduct, in *ascertaining* and *securing*
the *Duties* of *Excise* ; also copious Tables for the *Traders* to ascertain the Amount of those
Duties, without entirely depending upon the *Skill* and *Integrity* of the *King's* *Officer*.

To which is added

Cask-Gauging, &c. as practised in the *Port* of *London*.

The whole illustrated with many *New Copper-Plates* adapted to the Subject.

The SEVENTH EDITION,

For the Benefit of *Young Officers*, from the Valuable and Authentic *Manuscripts* of a COLLECTOR ; and of the late Mr. *John Downer* and Mr. *Joseph Bosley*, GENERAL SURVEYORS of the *London* Distillery.

By CHARLES LEADBETTER,

Many Years a Gauger in the *Royal Revenue* of *Excise* : R

And now augmented and improved by SAMUEL CLARK.

L O N D O N :

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Price Seven Shillings and Six-pence bound.



TO THE
OFFICERS
OF HIS
MAJESTY'S Royal Revenue
OF
EXCISE,

(Who are the best Judges of the Subject here treated of;)

AND ALSO TO THE
BREWERS, MALTSTERS, DISTILLERS, &c.
OF
GREAT BRITAIN;

The following

TREATISE,
OF
GAUGING

Is Humbly Inscribed

BY

Their Faithful

And Obedient Servant,

Charles Leadbetter.

TO THE
OFFICE OF THE

MAJESTY'S

EXCELLENCE

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To the READER:

SINCE GAUGING is one of the *most useful* Branches of the *Mathematicks*, and as the Author has had the Credit of an Employment under *the Honourable the Commissioners of his Majesty's Royal Revenue of Excise*, He presumes that his *Brother Officers* will expect no Apology for the present Undertaking. For,

The Compiler of the following Sheets, far from taking a malicious Satisfaction in laying before the World the *Errors* and *Defects* of the Treatises already extant upon the Subject of *Practical Gauging*, rather chooses to join with those, who have long complained, that an useful and general Treatise, relating to the Business of a *Gauger in the Excise*, has been extremely wanted, which should treat of those Matters, after a *natural and authentic* Manner.

Every Officer of Experience, who has had the forming of *Probationers* for the Excise, must know, that the greatest Difficulty to bring *Pupils* to consider those things, which are to be the Subject of their future Conduct, in a proper Light, is owing to their having imbibed wrong Notions from the incoherent Instructions of *Blind Guides*; but this Difficulty, the Author apprehends, will be removed for the future, by Means of the ensuing Treatise; as every *Writing-Master* and *Accomptant* may now easily acquire such an Insight into the *real Business* and Duty of an Excise-Officer, as must greatly tend to the Scholar's Advantage.

As some Writers have attempted to persuade the Publick, that *Tables* readily calculated are far more *exact* and *ready* in *Practical Gauging*, than the *Sliding Rule*; it may not be here amiss to observe, That if *Tables* happen to be false printed, as we frequently find most *Tables* are, the Officer must act at Random, not knowing whether he is *right* or *wrong*: Whereas, by the *Sliding Rule*, it is impossible he should ever *err*; for the Use of *that* Instrument being but once well understood, which by the Directions given in the following Treatise, it very easily may; the Officer with the greatest Dispatch and

Certainty, may, on all Occasions, come to the Exactness of the *tenth Part* of an Unit, which is as near as is ever required in Practice in the Excise, and therefore the Author is persuaded, that those who have taken the most Pains to decry the *Sliding Rule*, are truly ignorant of its Excellency and Use.

To those who understand how far the *Operations in Division*, if set down at large, would have extended this Treatise, and of how little Service they would have been to the Reader, there needs no Excuse for omitting them.

Being sensible that the Officers of Excise have little Leisure to apply their Minds to the *Speculative Part of Geometry*, for that Reason the *Demonstration* of some of the *Rules* are omitted.

For, notwithstanding the unnecessary Noise and Bustle some Gentlemen have made of late about *Algebra* and *Fluxions**, it is presumed no considerate Person, conversant in the *practic Part*

* The Rev. Dr. Isaac Watts, a Gent. long distinguished for his great Candor and good Sense, having treated these Matters with becoming Freedom and Judgment, (in his late Treatise of *The Improvement of the Mind*, Part I. Chap. 20.) I shall here give the Reader an Extract of some Part of it.

“ Tho’ I have so often commended *Mathematical Studies*, (*says the Doctor*,) and particularly the Speculations of *Geometry*, &c. as a Means to fix a wavering Mind, to beget an Habit of Attention, and to improve the Faculty or Reason; yet I would by no means be understood to recommend a Pursuit of these Sciences to those extensive Lengths to which some *Moderns* have advanced them, this is neither necessary nor proper for any Man, but those few who shall make these Studies their Profession and Support.

“ The general Principles of *Algebra*, *Geometry*, &c. have their valuable and excellent Uses, but a Penetration into the abstruse Difficulties and Depths of modern *Algebra* and *Fluxions*, the various *Methods of Quadratures*, the *Measurement* of all Manner of *Curves*, and their mutual *Transformation*, and twenty other things that some modern *Mathematicians* deal in, are not worth our Attention. And this is the Sentence of no less a Man than Dr. George Cheyne, who was a very good Proficient and Writer on these Subjects: He has not only affirmed, “ That they are barren and airy Studies for a Man to subsist upon; but has also had the Ingenuity to own this great but grievous Truth, *viz.* That tho’ they may quicken and sharpen the Invention, strengthen and extend the Imagination, improve and refine the Reasoning Faculty, and are of use both in the necessary and the luxurious Refinement of *mechanical Arts*; yet having no Tendency to rectify the Will, to sweeten the Temper, or mend the Heart, they often leave a *Stiffness*, a *Positiveness*, and *Sufficiency* on weak Minds, which is much more pernicious to Society, than all their Advantages can recompence.” He adds, further, concerning the launching into the Depth of these Studies, “ That they are apt to beget a *secret and refined Pride*, an *overweening* and *over-bearing Vanity*, which tempts their Admirers to presume on a kind of *Omniscience*, in respect to their Fellow Creatures, who have not risen to their Elevation; nor are these Studies fit to be trusted in the Hands of any but those who have acquired an *humble Heart*, a *lowly Spirit*, and a *sober and reachable Temper*, &c.”

See The Preface to an *Essay on Health and long Life*. By George Cheyne, M. D. R. C. Ed. and F. R. S. *viz.* Doctor of Physick of the Royal College at Edinburgh, and Fellow of the Royal Society.

Part of the *Excise*, let him be ever so fond of those *Speculations*, can see any Reason to expect they will ever be *in-joined* as a *necessary* Qualification for the Officers employed in that Branch of the Revenue.

The *Rationale* and *Progress* of the *Excise* seeming little understood, let it be therefore observed, as to its *Rise*, That tho' by the *Law of Nature* all things were originally common, and all Persons equal, there being then neither *King* nor *Subject*; yet when the *Law of Nature* came to be limited, and *Property* claimed, *Kings* or Rulers became absolutely necessary to maintain and defend such *Property*, (by which I mean *Life, Liberty, and Estate*;) And in order to support those *Kings* or Rulers in their Government, and to defray the *Expences*, which they must inevitably be at, in protecting the Publick, and administering Justice to every Member, *Taxes* and *Duties* were granted them by the *People*. And as to the *Reasonableness* and *Justice* of such Demands of *Duties* and *Taxes* by the *Prince*, and the *Obligation* to a ready and chearful Obedience and Compliance in the Payment thereof by the *Subject*, there is no less *Testimony* and *Authority* than the *Holy Scriptures*.

How provoking therefore must their Conduct be before *God*, and all *reasonable Men*, who are perverse as to offer *Insults* and *Indignities* to the Person of the *King's Officer*, and are eternally on the Watch, for Opportunities to render him contemptible and odious to the World: Such Men seem ignorant, that though the *Excise Duties* are made payable to the *King*, and are collected in *his Name*, yet only a very small Part thereof is applied to his *own Use*, while the much greater Share, as *nine Parts in ten* thereof, are appropriated to discharge the *National Debts*; which, until paid, remain an heavy Charge upon the whole Nation in general.

Many judicious and ingenious Gentlemen, who have been acquainted with the *Business* and *Revenue* of the *Excise*, have been under the greatest Astonishment, that since they have the Laws of the Land for their Foundation, and are managed in all their Branches with the greatest Prudence and Oeconomy, that they have hitherto been so little understood by *Manufacturers*

and *Traders*: But in Answer to this, the *Business* of the *Customs* long remained in the same Situation, to the great Trouble of the respective Officers, and the extreme Dissatisfaction of the *Subject*; and after several Attempts, the *Laws* and *Business* relating to that Branch of the Revenue have been reduced to *Method*, and the *Veil withdrawn**, to the great Improvement of that Branch of the Revenue, the Ease of the Officer, and the entire Satisfaction of every honest and well-meaning Subject.

The Author having been frequently applied to when he was in the Excise, as well as since, to adjust Differences relating to measuring *Marl-Pits* and *Cord Wood*, he has been tempted to say something upon those Heads; and hopes the Reader, who thinks it foreign to the Subject, will excuse him for so doing.

The Charges of this SEVENTH Impression, arising not only from the *Smallness* of the *Letter*, the *Goodness* of the *Paper*, the *Graving*, *Printing*, &c. are Articles which, we think, at first Sight, cannot leave any judicious Purchaser (who reads the following *Postscript*) the least Reason to complain, *that he has not a Pennyworth for his Penny*.

P O S T S C R I P T.

Concerning the *Improvements* made to the *Several Editions* of the *Royal Gauger*.

FOR the *valuable* Additions and Improvements, made to the SECOND Edition of the *Royal Gauger*, and which have enlarged it *above one Fourth*, the Public are obliged for most of them to the Papers of a *Collector* and *General Surveyor*, both lately deceased. The latter was that able and experienced Officer, Mr. *John Downer*, General Surveyor in the *Distillery* of *London*†. But we have not obtained Leave to mention the Name of the *Collector*, who drew up those Papers, intitled.

The

* See *A Complete View of the British Customs*, by Mr. *Crouch*, containing, *inter Alia*, the Rules, Orders, Directions, Allowances and Regulations, &c. relating to the Business of the Customs.

† Mr. *John Downer* (as we were credibly informed) was born at *Southampton*. He was *forty-six Years* an Officer in the Excise: The first *sixteen Years* he officiated at *Bristol*, and other Places in the Country; but he was found so valuable an Officer, that the last *thirty Years*

The Rise and Progress of the Excise, and the Appendix relating to Prosecutions. Whoever pursues the *Appendix* with a serious Attention, will find the *Officer's* Duty so tempered and counterbalanced, by a judicious Regard and Tendernefs for the Welfare of *the Subject*, as is rarely to be met with. And from thence it will likewise plainly appear, that the *Author's* uncommon Understanding and Discernment in the Business of his Profession, had no pernicious Influence upon his *Religion* or *Morals*.

Concerning the *THIRD* Edition.

THE Reader may be assured, that the *Additions and Improvements* made to the *Third* Edition are *valuable* and *many*: And we have Permission to say, that for those referred to in the *New Plate*, N^o. VI, (facing *Page* 152) the Public are indebted to the *Experience* and *Accuracy* of the late Mr. *Joseph Bosley**, General Surveyor of the *London Distillery*, near 30 Years, whose great Talents and Integrity will undoubtedly render his Memory for ever truly valuable to every Gentleman of the same Profession.

Con-

Years he was mostly employed in *London*. When the *Union* between the two Kingdoms took place, *Anno* 1707, by the special Appointment of the *Honourable Commissioners*, he went down *Methodizer* of the Excise in *Scotland*, where he continued near two Years; and having faithfully discharged that important Trust with great Judgment and Moderation, he returned to *London*. He died the 24th of *November*, 1739, and was buried on *St. Andrew's Day*, (which was his *Birth-Day*) in *St. George's Church-Yard*, *Radcliff-Highway*, as appears by the following Certificate.

" THIS is to certify whom it may concern, that John Downer, Gent. of the Parish of St. George, Middlesex, was buried at the said Parish-Church, on the thirtieth Day of November, 1739, as appears from the Register-Book belonging to the said Parish.

" Witness my Hand this thirteenth Day of April, 1742.

" WILLIAM SIMPSON, Curate and Register."

* Mr. *Joseph Bosley* was born at *Hungerford*, in *Berkshire*, in the Year 1671. In the Year 1704, he was appointed a Surveyor in the *London Distillery*; and some Time after, by the special Appointment of the *Honourable Commissioners*, he went down *Inspector* and *Methodizer* of the Excise to *Bristol*, and there resided about two Years; when having discharged that important Trust with great Judgment and Integrity, he was recalled to *London*, and appointed an *Examiner* in the *London Distillery*; and soon after (in Justice to his great Abilities) their Honours were pleased to appoint him General Surveyor of the *London Distillery*, which Post he enjoyed to the Day of his Death. And we should be highly unjust to his Merit and Memory, if we did not refer the Publick to his surviving Contemporaries in the Excise, for his not only having, but for his deserving the Character of the most accomplished PRACTICAL Gauger then living. He died of the Stone, the 5th of *November* (which was his *Birth-Day*,) in the Year 1737, aged 66, and was buried in *St. James's Church-Yard*, *Clerkenwell*, as appears by the following Certificate.

" THIS is to certify whom it may concern, that Joseph Bosley, Gent. of the Parish of St. James's, Clerkenwell, in the County of Middlesex, was buried at the said Parish-Church, on the twentieth Day of November, 1737, as appears by the Register-Book belonging to the said Parish.

" Witness my Hand this fourteenth Day of September, 1749.

" ARCHIBALD CAMPELL, Curate and Register."

Concerning the FOURTH Edition.

THE Reader will here find several useful *Additions* and *Improvements*; particularly in Regard to *Irregular Figures*: And in finding the *Areas* of *such* Figures the greatest Difficulty in Gauging consists. The young Gauger is here supplied with Instructions so plain and obvious, as will enable him, with Ease, to find the *Content* of any Figure, how *irregular* soever.—The Methods of taking *accurately* the Dimensions of *Casks*, and of determining the *true* Variety to which each belongs, are also delivered in the most conspicuous Manner.—The Officer's Duty relating to the Excise on *Glass* is likewise now inserted; and every Step necessary to be taken in that Branch of the Revenue set in its proper Light.

Concerning the FIFTH Edition.

THE Reader will find this Edition much more correct than any of the former; and many *Additions* inserted in their proper Places, throughout the whole Work; particularly the Alterations that have been lately made in the Duties of several Commodities subject to the Laws of Excise.—In short, nothing has been omitted to render the Fifth Edition of the *Royal Gauger* complete.

Concerning the SIXTH Edition.

THE greatest Care has been taken to correct such Errors as have escaped the Editors of the *Royal Gauger*; nor has any Expence or Pains been spared to collate such Alterations in the several Duties of Excise, as have taken Place since the Publication of the last Edition. The necessary Tables for ascertaining those Duties, together with their respective Allowances, Drawbacks, &c. are added, whereby this Work is now rendered of general Use to both Trader and Officer.

Concerning the SEVENTH Edition.

IN this Edition of the *Royal Gauger*, the Reader will meet with all such Alterations relating to the charging, securing, &c. of the Duties of Excise, as have taken Place since the Publication of the Sixth Edition of this Work in 1766.

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Since I could not in this Treatise well avoid sometimes making Use of the common Algebraic Signs, or Characters, I shall here explain them.

SignsNames.	Is the Sign of Addition, as 7 + 3 is 7 more 3, and signifies that the Numbers 7 and 3 are to be added into one Sum: The like is to be understood where several Numbers have this Sign betwixt them, as 23 + 7 + 91 + 5, &c. denote that these Numbers are all to be added into one Sum.
+ More	
— Less	Is the Sign of Subtraction, as 8 — 3 is 8 less 3, and signifies that 3 is to be taken from 8, that their Difference may appear.
× Into	Is the Sign of Multiplication, as 8 × 3 is 8 into 3, and signifies that 8 is to be multiplied into, or with 3.
÷ By	Is the Sign of Division, as 9 ÷ 3 is 9 by 3, and signifies that 9 is to be divided by 3.
= Equal	Is the Sign of Equality, as 8 = 8; or 8 + 4 = 12; or 8 — 4 = 4, &c. that is, 8 is equal to 8, and 8 more 4 is equal to 12, and 8 less 4 is equal to 4.
::	Is the Sign of Proportion, and :: is always placed betwixt the two middle Numbers in Proportion, or the Golden Rule or Rule of Three; thus 3 : 6 :: 4 : 8, which must be read thus, as 3 is to 6 so is 4 to 8.
□ or q	Is the Sign that the Number to which it is joined, is squared: As in Pages 89, 166.
□√	Square Root.

Directions

Directions for Binding the ROYAL GAUGER.

Concerning the VOUCHERS.

1. **THIS** Half-sheet must be cut in two; and the *Ale* and *Beer Voucher* must face the *Ale* and *Beer Abstract* on Page 237.

The *Malt Voucher* must face the *Malt Abstract* on Page 239.

These *Vouchers* (after a *Guard* is taken out from the *Right-Hand*) must be folded up, to be a little longer, but no broader than the printed Page, including the *Notes*; and, if this is not done with some Care, the *Indorsements* will stand awry. N. B. The Edges at the *Left-Hand*, and *Bottom*, should be cut even before you fold them.

Of placing and ordering the Cuts.

2. When you have allowed to *Plate A* (which is to face the *Title*) a *Guard* to fasten it to the Sheet, if you have more *blank Paper* to the *Right-Hand* than will just allow the *Plate*, when open, to lie clear of the Book, cut it off; for the *Blank* is only left that no Part of the *Plate*, when *unfolded*, may be hid by the *Leaves* of the Book: This, and the other *colour'd Plate*, should not be put into the Book till after the Book has been *beat*; but they must be put in before it is pressed. Since *Dampness* will be apt to make these *colour'd Plates* stick together, and also to the Book, Care should be taken, when the Book is *covered* or *pasted down*, to put some *Folds* of *Paper* betwixt the *Cover* and the *Plate A*; and the less Time the Book stands in the *Press* (till after the *Paper* pasted down at the *Beginning* is dry) the better.

3. The *blank Paper* to *Plates 1, 2, 3, 4, 5, and VI.* scarce allowing them to lie out of the Book when *unfolded*, you must make your *Guards* to fasten them to the Back the narrower. There's little or nothing can be cut off the *Heads* of these *Six Plates*, without making them too *short at the Bottom*.

Plate $\left\{ \begin{array}{l} 1 \\ 2 \\ VI. \\ 3 \\ 4 \text{ and } 5. \end{array} \right\}$ To fold out facing Page $\left\{ \begin{array}{l} 65 \\ 114 \\ 152 \\ 178 \\ 216 \end{array} \right\}$ of the FIRST Part.

4. From the Nature of some of the *Tables*, it could not be avoided but some Pages must be printed much broader, and others much longer than the rest of the Book, particularly in the *Sheets I. and U.* and therefore the Book must not be cut too near,

THE HISTORY OF THE REIGN OF CHARLES THE FIRST

CHAPTER THE FIRST

THE first of James the first was born at Salisbury the sixth of March the sixteenth year of Elizabeth the first.

His mother was Mary the second daughter of Henry the eighth and Elizabeth the first.

He was brought up at Winchester and then at Oxford where he was created knight of the bath the twelfth of June the sixteenth year of Elizabeth the first.

He was then sent to France to be married to Anne the first daughter of Henry the second king of France.

He was married to Anne the first daughter of Henry the second king of France the twelfth of June the sixteenth year of Elizabeth the first.

He was then sent to France to be married to Anne the first daughter of Henry the second king of France.

He was then sent to France to be married to Anne the first daughter of Henry the second king of France.

T H E Royal Gauger.

P A R T I.

C H A P. I.

NOTATION * of *Decimal Fractions* †.

NOTATION of DECIMALS is different from that of *Whole Numbers*; for whole Numbers *increase* from the *Right Hand* towards the *Left* in a *tenfold* Proportion from *Unity* or one; and *Decimals decrease* from *Unity*, in the *same* Proportion from the *Left Hand* towards the *Right*: The following Table makes this evident,

<i>Units</i>	1.	Unit the <i>Integer</i> .
<i>Primes</i>	.1	One Tenth Part of the <i>Integer</i> .
<i>Seconds</i>	.01	One Hundredth Part.
<i>Thirds</i>	.001	One Thousandth Part.
<i>Fourths</i>	.0001	One Ten Thousandth Part.
<i>Fifths</i>	.00001	One Hundred Thousandth Part.
<i>Sixths</i>	.000001	One Millionth Part.
<i>Sevenths</i>	.0000001	One Ten Millionth Part.
<i>Eighths</i>	.00000001	One Hundred Millionth Part.
<i>Ninths</i>	.000000001	One Thousand Millionth Part.

So that *Decimal Fractions* are of several *Denominations* or *Names*, as *Primes*, *Seconds*, *Thirds*, &c. and because the *Denominator* is always 1, with as many *Cyphers* annexed as there are *Decimal Places*; for this Reason the *Numerator* or *Decimal* is always wrote alone without the *Denominator*; so if I would express *Twenty-five Hundred Parts* of any Thing, which vulgarly stands thus $\frac{25}{100}$ because the *Denominator* is 1, with as many *Cyphers* prefixed as there are *Decimals* or *Places* in the *Numerator*, it is always expressed thus .25; and $\frac{123}{1000}$ thus .123, and $\frac{5382}{10000}$ thus .5382, &c. And because *Vulgar Fractions* are the *Foundation* of *Decimals*, it is necessary to shew the Manner of *REDUCING* a *Vulgar Fraction* to a *Decimal*.

* *Notation* or *Numeration* in *Arithmetic* is the true *Distinction*, *Estimation*, and *Pronunciation* of *Numbers*; or the *Rule* to read any Number, tho' never so great, and to have a distinct *Idea* of each *Place* or *Figure* of it.

† *Note*, The *Sliding Rule* being calculated for *Decimal Fractions*, the *Learner* should be acquainted therewith before he proceeds to use the *Rule* itself.

C H A P. II.

* REDUCTION of Decimal Fractions.

TO reduce a *Vulgar Fraction* to a *Decimal Fraction*.

The RULE.

Annex to the Numerator of the given *Vulgar Fraction* a competent Number of Cyphers, and divide that Sum by the Denominator, the Quotient is the *Decimal* equal to the given *Vulgar Fraction*.

For as,

The Denominator of the given *Vulgar Fraction* Is to the Numerator, So is an Unit, with so many Cyphers annexed, as you intend your *Decimal* shall have Places, To the *Decimal* required.

See these *Examples*, and mark them well.

1. Reduce $\frac{1}{4}$ to a *Decimal*.

$$4)1.00(.25$$

2. Reduce $\frac{1}{2}$ to a *Decimal*.

$$2)1.0(.5$$

3. Reduce $\frac{3}{4}$ to a *Decimal*.

$$4)3.00(.75$$

4. Reduce $\frac{21}{80}$ to a *Decimal*.

$$80)11.0000(.1375$$

See Plate A,
Fig. 1.

N. B. The first *Example* is wrought thus by the *Sliding Rule*. Set 4 upon B. to 1 upon A, and against 100 upon A, it 25 upon A, the *Decimal* sought.

Or,

Set 4 upon A, to 1 upon B, and against 100 upon A, is 25 upon B, as before; But I shall explain this more at large, when I come to treat of the *Sliding Rule*.

2. To reduce a *Compound Vulgar Fraction* to a *Decimal*.

Example 1. Reduce $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{5}{8}$ to a *Decimal*.

First, Reduce them to a *single Fraction*, by multiplying all the Numerators together, for a new Numerator, which make 30; 2dly, All the Denominators multiplied together, make 120; which placed under the other is this *single Fraction*, $\frac{30}{120}$, or $\frac{1}{4}$, whose *Decimal* will be found .25 as before.

Example

* We suppose the Reader to be acquainted with the four first Rules of *Vulgar Arithmetic*; for this Reason we place Reduction before Addition; tho' some place Reduction of Decimals after Division in whole Numbers.

Chap. II. Reduction of Decimals.

Example 2. Reduce $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{3}{4}$ of any Thing to a Decimal Fraction.

By the Directions above I find it to be this single Fraction $\frac{3}{32}$
 $32 \overline{) 3.00000 (.09375}$

Note, In every Quotient that arises in finding a Decimal Fraction, there must be as many Decimal Places as you annex Cyphers to the Numerator of the given Vulgar Fraction; and the Defect of Places must be supplied by prefixing Cyphers to the Left Hand of the Decimal. Thus in the Example above, there is one Cypher prefixed on the Left Hand of the Quotient 9375; so that the true Decimal is .09375.

In finding the Decimal of Money, Weights, Measures, Time, Motion, &c. you must reduce what you are seeking the Decimal of, into the lowest Name mentioned, and divide by what you design for the Integer reduced into the same Name; and the Quotient thence arising is the Decimal sought.

Example 1. in English Money.

Q. What's the Decimal of 1s. a Pound being the Integer?

A. It is this Vulgar Fraction $\frac{1}{20}$.

$$20 \overline{) 1.00 (.05}$$

Example 2.

Q. What's the Decimal of 1d. a Pound being the Integer?

A. It is this Compound Vulgar Fraction $\frac{1}{12}$ of $\frac{1}{20}$ = $\frac{1}{240}$.

$$240 \overline{) 1.00000000 (.00416666}$$

Example 3.

Q. What's the Decimal of 1 Farthing, a Pound being the Integer?

A. It is this Compound Vulgar Fraction $\frac{1}{2}$ of $\frac{1}{12}$ of $\frac{1}{20}$ = $\frac{1}{960}$.

$$960 \overline{) 1.00000000 (.00104167}$$

After the above Manner is the common *Decimal Table of Money* calculated in most Books treating of *Decimals*.

Thus if you require to find the *Decimal* of 12s. 9d. $\frac{1}{2}$, a Pound being the *Integer*, the Work will stand thus:

$$\begin{array}{r} s. \quad d. \\ 12 \quad 9\frac{1}{2} \\ 12 \\ \hline 153 \\ 4 \\ 960 \overline{) 614.00000000 (.63958333} \\ \dots\dots\dots \end{array}$$

Reduction of Decimals.

Part I.

Of TROY WEIGHT.

Q. What's the *Decimal* of 9 ^{oz.} 12 ^{pw.} 20, a *Pound Weight* being the *Integer*?

OPERATION.

oz. pw. gr.

9 12 20

20

192

24

768

386

4628 Grains being divided by 5760, the Grains in one Pound Troy, the Quotient will be .803472 the *Decimal* sought.

Of APOTHECARIES WEIGHT.

The Denominative Parts are *Pounds*, *Ounces*, *Drachms*, *Scruples*, *Grains*.

That is, 20 Grains make one Scruple, 3 Scruples make one Drachm, 8 Drachms make one Ounce, and 12 Ounces make one Pound.

Q. What's the *Decimal* of 10 ^{oz.} 6 ^{dr.} 1 ^{scr.} 12, a *Pound* being the *Integer*?

8

86

3

259

20

5760)5192.000000(.901371

Of AVOIRDUPOISE WEIGHT.

The Denominative Parts are *Tuns*, *Hundreds*, *Quarters*, *Pounds*, *Ounces*, *Drachms*.

That is, 16 Drachms make one Ounce, 16 Ounces make one Pound, 28 Pounds make one Quarter of a Hundred, 4 Quarters make one Hundred, and 20 Hundreds make one Tun.

C. gr. lb. oz. dr.

Q. What's the *Decimal* of 16 ^{gr.} 2 ^{lb.} 20 ^{oz.} 12 ^{dr.} 10, a *Tun* being the *Integer*?

A. These

Chap. II. Reduction of Decimals.

5

c. qr. lb. oz. dr.

A. These 16 2 20 12 10 reduced into Drachms are 478410, which divided by 573400, the Drachms in a Tun Weight, gives in the Quotient .8342808 the Decimal sought.

Of WINE MEASURE.

The Denominative Parts are Tuns, Butts or Pipes, Hogheads, Gallons, Pottles, Quarts, Pints.

That is, 28½ Cubic Inches are one Pint, 2 Pints make one Quart, 2 Quarts make one Pottle, 2 Pottles make one Gallon, 63 Gallons make one Hoghead, 2 Hogheads make one Pipe or Butt, 2 Pipes or Butts make one Tun.

By this Measure all distilled spirituous Liquors, Oil, Cyder and Vinegar are measured.

Q. What's the Decimal of 1 1 50 1 1 1, a Tun being the Integer?

A. The given Quantity reduced into Pints are 1919, which divided by 2016, the Pints in a Tun, the Quotient is .951884, the Decimal sought.

Of ALE-MEASURE at LONDON, and within the Bills of Mortality.

The Denominative Parts are Barrels, Gallons, Quarts, Pints.

That is, 35½ cubic Inches make one Pint, 2 Pints make one Quart, 4 Quarts make one Gallon, 32 Gallons make one Barrel.

In the Country the Ale, Beer, strong and small, are all one, viz. 34 Gallons to the Barrel, and 282 cubic Inches to the Gallon.

Q. What's the Decimal of 29 3 1, a Barrel being the Integer?

256)239.000000(.933593 Answer.

Of BEER MEASURE at LONDON.

The Denominative Parts are Butts, Barrels, Kilderkins, Firkins, Gallons, Quarts, Pints.

That is, 2 Pints make one Quart, 4 Quarts make one Gallon, 9 Gallons make one Firkin, 2 Firkins make one Kilderkin, 2 Kilderkins make one Barrel, and 3 Barrels make one Butt.

B 3 Q. What's

Reduction of Decimals. Part I.

Q. What's the Decimal of 2 $\frac{1}{2}$ 1 $\frac{1}{5}$ 1 $\frac{1}{10}$, a Butt being the Integer?

ANSWER.

864)835.000000(.966435 Answer.

Of WATER MEASURE.

Water Measure is so called from measuring of Coals upon the River of Thames at London; and the Bushel by which Coals are measured, contains $19\frac{1}{2}$ Inches Diameter from Outside to Outside, and 8 Inches deep, with a plane and even Bottom; and such a Bushel contains 2389.179195 square or cubic Inches; 36 of these Bushels make one Chaldron; 33 Quarts make one Bushel, and 2 Pints make one Quart.

Q. What's the Decimal of 20 27 1, a Chaldron being the Integer?

A. These reduced into Pints, are 1375, which divided by 2376 the Pints in a Chaldron, the Quotient is .5787037, the Decimal sought.

Of DRY MEASURE.

The Denominative Parts are Lasts, Weys, Quarters, Coombs, Bushels, Pecks, Gallons, Pints.

That is, 33.6 cubic Inches make one Pint, 8 Pints make one Gallon, 2 Gallons make one Peck, 4 Pecks make one Bushel, 4 Bushels make one Coomb, 2 Coombs make one Quarter, 5 Quarters make one Wey, or Load, 2 Weys make one Last.

Q. What's the Decimal of 0 4 1 1 3 0 2, a Last being the Integer?

A. These reduced into Pints are 2418, which divided by 5120 the Pints in a Last, the Quotient is .472265, the Decimal sought.

Of LAND MEASURE.

The Denominative Parts are Acres, Roods, Poles or Perches. That is, 40 Perches make one Rood-land, 4 Rood-lands one Acre.

Q. What's

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Q. What's the *Decimal* of $\overset{r.}{1} \overset{p.}{10}$, an *Acre* the *Integer*?

A. These reduced into *Perches* are 50, which divided by 160, the *Quotient* is .3125, the *Decimal* sought.

Of LONG MEASURE.

The Denominative Parts are *Miles, Furlongs, Poles, Yards, Feet, Inches, Barley-Corns.*

That is, 3 *Barley-Corns* make one *Inch*, 12 *Inches* make one *Foot*, 3 *Feet* make one *Yard*, $5\frac{1}{2}$ *Yards* make one *Pole*, 40 *Poles* make one *Furlong*, 8 *Furlongs* make one *Mile*.

Q. What's the *Decimal* of $\overset{f.}{0} \overset{p.}{27} \overset{y.}{4} \overset{f.}{2} \overset{i.}{10}$, a *Mile* being the *Integer*?

A. These reduced into *Inches* are 5524, which divided by 63360 the *Inches* in a *Mile*, give in the *Quotient* .08718434, the *Decimal* sought.

Of YARD MEASURE.

The Denominative Parts are *Yards, Quarters, Nails.*

That is, 4 *Nails* make one *Quarter*, 4 *Quarters* make one *Yard*.

Q. What's the *Decimal* of $\overset{q.}{3} \overset{n.}{1}$, a *Yard* the *Integer*?

A. These reduced into *Nails* are 13, which divided by 16, the *Nails* in a *Yard*, the *Quotient* is .8125, the *Decimal* sought.

Of TIME.

The Denominative Parts are *Years, Months, Weeks, Days, Hours, Minutes, Seconds.*

That is, 60 *Seconds* make one *Minute*, 60 *Minutes* make one *Hour*, 24 *Hours* make one *Day*, 7 *Days* make one *Week*, 4 *Weeks* make one *Month*, 13 *Months* 1 *Day*, and 6 *Hours*, make one *Year* GREGORIAN; or that *Year* which is now observed by us in ENGLAND.

Q. What's the *Decimal* of $\overset{d.}{271} \overset{b.}{19} \overset{m.}{15} \overset{s.}{50}$, a *Year* being the *Integer*?

A. These reduced into *Seconds* are 23483750, which divided by 31557600, the *Seconds* in a *Year*, gives in the *Quotient* .74415513, the *Decimal* sought.

Of MOTION.

The Denominative Parts are *Circles, Signs, Degrees, Minutes, Seconds.*

That is, 60 *Seconds* make one *Minute*, 60 *Minutes* make one *Degree*, 30 *Degrees* make one *Sign*, 12 *Signs* make one *Circle* in the *Zodiac*, or the *Circumference* of the *Heavens*.

Q. What's

2. What's the Decimal of $23^{\circ} 19' 56''$, a Circle or 360° , being the Integer?

A. These reduced into Seconds make 83996, which divided by 1296000, the Seconds in a Circle, give .064811, the Decimal sought.

Of FOOT MEASURE.

The Denominative Parts are Feet, Inches, Parts.

That is, 12 Parts make one Inch, 12 Inches make one Foot.

2. What's the Decimal of $\frac{1}{4}$ of an Inch, a Foot the Integer?

A. It is this Compound Vulgar Fraction $\frac{1}{4}$ of $\frac{1}{12} = \frac{1}{48}$.

$$48)1.000000(.020833$$

2. What's the Decimal of $3\frac{1}{4}$ Inches; a Foot the Integer?

First, $\frac{1}{4}$ is $\frac{1}{4}$ of $\frac{1}{12}$, and 3 is $3 \times \frac{1}{12} = \frac{1}{4}$, with two Fractions, viz. $\frac{1}{4}$ of $\frac{1}{12}$, and $\frac{1}{4}$ added together according to the Rule of Addition of Vulgar Fractions, make $\frac{5}{12}$, which reduce into a Decimal, as has been taught above.

$$192)52.00000000(.27083333$$

By the above Method I calculated the following Table.

A Table of the Decimal Parts of a Foot.

This Table is placed upon one of the Sides of Vero's Sliding-Rule.

Inches.	Decim. Parts.	Inches.	Decim. Parts.	Inches.	Decim. Parts.
$\frac{1}{4}$	.02083333	$\frac{1}{4}$	.35416666	$\frac{1}{4}$	.6875
$\frac{1}{2}$	.04186666	$\frac{1}{2}$	.375	$\frac{1}{2}$	.70833333
$\frac{3}{4}$	.0625	$\frac{3}{4}$	.39583333	$\frac{3}{4}$	.72916666
1.	.08333333	5.	.41666666	9.	.75
$\frac{1}{4}$	.10416666	$\frac{1}{4}$	.4375	$\frac{1}{4}$	.77083333
$\frac{1}{2}$	.125	$\frac{1}{2}$	.45833333	$\frac{1}{2}$	.79166666
$\frac{3}{4}$	.14583333	$\frac{3}{4}$	.47916666	$\frac{3}{4}$	.8125
2.	.16666666	6.	.5	10.	.83333333
$\frac{1}{4}$	.1875	$\frac{1}{4}$	.52083333	$\frac{1}{4}$	.85416666
$\frac{1}{2}$	.20833333	$\frac{1}{2}$	.54166666	$\frac{1}{2}$	.875
$\frac{3}{4}$	.22916666	$\frac{3}{4}$	.5625	$\frac{3}{4}$	.89583333
3.	.25	7.	.58333333	11.	.91666666
$\frac{1}{4}$	.27083333	$\frac{1}{4}$	.60416666	$\frac{1}{4}$	.9375
$\frac{1}{2}$	.29166666	$\frac{1}{2}$	.625	$\frac{1}{2}$	.95833333
$\frac{3}{4}$	.3125	$\frac{3}{4}$	.64583333	$\frac{3}{4}$	.97916666
4.	.33333333	8.	.66666666	12.	Integer.

To find the Value of a Decimal Fraction in the known Parts of Money, Weight, Measure, Time, &c. The

The R U L E.

Multiply the given Decimal by the Parts of the next inferior Denomination, and cut off towards the Right Hand of the Product so many Places as the given Decimal contains, and those on the Left Hand are the Value of the given Decimal; and if any thing remain, it is the Decimal of an Integer in the Denomination last found, which must be brought to the lowest Name mentioned: A few Examples will make this plain to the young Practitioner.

2. What's the Value of this Decimal .0125 of a Pound Sterling? See the Work.

$$\begin{array}{r}
 \text{l.} \quad .0125 \\
 \hline
 20 \\
 \hline
 \text{Shillings} \quad .2500 \\
 \hline
 12
 \end{array}$$

Answer. Pence 3.00

As often as Cyphers fall on the Right Hand of your Work, always drop them; for they are of no Value.

2. Example. What's the Value of this Decimal .95 of a Pound Sterling?

$$\begin{array}{r}
 \text{l.} \quad .95 \\
 \hline
 20
 \end{array}$$

Answer. Shillings 19.00

3. Example. What's the Value of this Decimal .0375 of a Pound Sterling?

$$\begin{array}{r}
 \text{l.} \quad .0375 \\
 \hline
 20 \\
 \hline
 \text{Shillings} \quad .7500 \\
 \hline
 12
 \end{array}$$

Answer. Pence 9.00

4. Example. What's the Value of .528125 of a Pound Sterling?

$$\begin{array}{r}
 \text{l.} \quad .528125 \\
 \hline
 20 \\
 \hline
 \text{Shillings} \quad 10.562500 \\
 \hline
 12 \\
 \hline
 \text{Pence} \quad 6.7500 \\
 \hline
 4
 \end{array}$$

Farthings 3.00 Answer 10s. 6d. 3q.

There

Reduction of Decimals. Part I.

A Compendious Method of finding the Value of the Decimal of a Pound Sterling.

There is a *short* Way of discovering the Value of a Decimal of a Pound Sterling, viz. The first Figure in the Place of Primes, is, when doubled, so many Shillings, and the other Figures are Farthings, only observe, that for every 25, to cast away one Farthing.

Example. Let .4862 be the Decimal Part of a Pound, its Value is required.

First, The 4 in the Place of Primes, being doubled, is 8s. and because the 8 is more than 5, I take away 5, and for it add one Shilling to the 8s. and that makes it 9s. and the remaining Figures is 362; but you may omit the last Figure to the Right Hand; then because there is but one 25 in 36, I call 36 but 35 Farthings, which is 8d. $\frac{3}{4}$, so the Value of the given Decimal is 9s. 8d. $\frac{3}{4}$. The like observe of any other Decimal of a Pound Sterling.

Example 2. Q. What's the Value of .933593 of a Barrel of Ale, LONDON Measure?

.933593
32

1867186

2800779

Gallons 29.874976

4

Quarts 3.499904

2

Pints 999808 nearly 1 Pint. For it is nine hundred, ninety-nine thousand, eight hundred and eight Million Parts of a Pint.

Example 3. Q. What Part of a Foot is .27083333?

.27083333

12

Inches 3.24999996

12

Parts 2.99999952

In.

Pts.

Answer 3 2.99999952 or $3\frac{1}{4}$ Inches nearly.

CHAP. III.

ADDITION of Decimal Fractions.

THIS is the very same with Addition of whole Numbers of one Name or Denomination, but you must observe to place *Primes* under Primes, *Seconds* under Seconds, &c. whether they be *Cyphers* or *significant Figures*, and when the Work is done, make a *Point* or *Dot* with your Pen between the whole Numbers (if there be any) and *Decimal Fraction*: This is known by cutting off so many Places to the *Right Hand* as your *greatest* Decimal Fraction contains: See the following *Examples*, which will render it plain.

Fractions.	Mixt Numbers.
.7403	3758.14
.04681	2164.927
.904283	1791.2063
.12305	1480.07352
.3197	1365.0067896
.8	10.0004

Sum 2.934143

Sum 10569.3540096

The Sum of the *Fractions* amounts to two whole, and .934143 *Decimal Parts* of the *Integer*; for in the *greatest* *Fractions* there are *Six Places*, and therefore I cut off *Six Places* to the *Right Hand* of the Sum: But in the *mixt Number* the *greatest* *Fraction* consists of *seven Places*, for which Reason I cut off *seven Places* to the *Right Hand* of that Sum.

Examples of Money.

l.	r.	s.	d.	q.
87.1246	87	2	5	3.616
72.83574	72	16	8	2.3104
62.25	62	5	0	0.
57.716	57	14	3	3.36
43.3	43	6	0	0.
34.628458	34	12	6	3.31968

357.854798
20

357 17 1 0.60608

Shillings 17.095960

12

Pence 1.15152

4

Farthings .60608 agreeing exactly with that on the *Right Hand*.

Alc.

Addition of Decimals. Part I. *Ale Measure. The Method of casting up in an Excise-Book, the Charge on a Country Viſtaller.*

	Days	X		VI.		Cyder.	
		B.	G.	B.	G.	H.	G.
1754 August	17	17 $\frac{1}{4}$	7. 8	9 $\frac{1}{2}$	3. 4	15 $\frac{1}{4}$	12. 7
	23	20 $\frac{1}{4}$	3. 5	8 $\frac{3}{4}$	6. 5	18 $\frac{1}{4}$	14. 3
	25	12 $\frac{3}{4}$	8. 4	4 $\frac{1}{4}$	7. 8	12 $\frac{1}{4}$	2. 1
	29	10	5. 7	5	3. 9	3 $\frac{3}{4}$	6. 8
September	2	14 $\frac{1}{4}$	6. 6	7 $\frac{3}{4}$	8. 9	20 $\frac{1}{4}$	15.
	5	8	2. 1	6	2.	7 $\frac{1}{2}$	11. 3
	8	3 $\frac{3}{4}$	7. 8	5	1. 1	8 $\frac{3}{4}$	7. 9
	10	14 $\frac{1}{4}$	3. 9	4 $\frac{1}{4}$	3. 3	16 $\frac{1}{4}$	12. 4
Odds	14	10 $\frac{1}{4}$	5. 5	7 $\frac{1}{4}$	3. 8	10 $\frac{1}{4}$	10. 5
	17	18 $\frac{1}{4}$	4. 2	6	5. 4	6 $\frac{3}{4}$	4. 6
Odds		1 $\frac{1}{2}$		1 $\frac{1}{4}$		1 $\frac{1}{2}$	
* Caleb Bono		131		66 $\frac{3}{4}$		121	
Carried forward			4. 5		3. 6		3. 1

The Gallons and Parts of Gall. of X or Strong Beer.	The Gallons and Parts of Gall. of V. or Small Beer.	The Gallons and Parts of Gall. of Cyder.
8.5)55.5(6=1 $\frac{1}{2}$	8.5)66.1(5=1 $\frac{1}{4}$	15.75)97.60(6=1 $\frac{1}{2}$
51.0	42.5	94.50
4.5	3.6	3 10

The above Operations explained. N. B. The three *Dividends* above are the *Totals* of the respective Gallons and Parts of Gallons; and the *Divisors* 8.5 are one fourth Part, or Quarter of a Barrel; and the *Divisor* 15.75 is one fourth Part, or Quarter of an Hogshead: and the *Remainders* are to be carried to the *Viſtaller's* growing Charge or Account.

The above Columns and Entries explained. Explanation. The *Entries* above we suppose to be the *Officer's Book*, who surveys a *Country Viſtaller*: The first and second Columns shew the Year, Month, and Day when the Charges were made; the third Column under B, shews the Barrels and Quarters; and the fourth Column under G, shews the Gallons and Decimal Parts of a Gallon of Strong Beer, which is signified by X; the next two Columns (under VI) that marked B, shews the Barrels and Quarters of Barrels; and that marked G, the Gallons and Decimal Parts of a Gallon of Small

* Caleb Bono, the Viſtaller's Name.

Chap. IV. Subtraction of Decimals.

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Small Beer, which is signified by VI; the *two last Columns* (under *Cyder*) that marked H, shews the *Hogsheads* and *Quarters* of *Hogsheads*; and that marked G, the *Gallons* and *Decimal Parts* of a *Gallon* of *Cyder*.

Now to add up these *Charges*, you are to consider, that 34 *Gallons* make a *Barrel* both of *Strong* and *Small Beer*, one *Fourth* of which is 8.5 *Gallons*. And the *Cyder* is gauged by the *Wine Gallon*, 63 of which make one *Hogshead*, one *Fourth* of which is 15.75 *Gallons*. Then upon casting up the *Cyder Gallons* and *Tenths*, I find the *Total* to be 97.6 *Gallons*, which divided by one *Fourth* of a *Hogshead*, viz. 15.75 the *Quotient* is 6 *Quarters* of a *Hogshead*, equal to 1½ *Hogshead*, which is to be put in the *Column* titled H; and the *Remainder* 3.1 must be placed at the *Bottom* of the *Column* G, and is to be carried forward. The same *Order* is to be observed in casting up the *Strong* and *Small Beer*; so that there are *Odds* 1½ *Barrels* of *Strong*, which comes from the *Strong Gallons* and *Parts*; and *Odds* 1½ *Barrels* of *Small*, which comes from the *Small Gallons* and *Parts*; which make in all 131 *Barrels* of *Strong*, 66½ *Barrels* of *Small*, and 121 *Hogsheads* of *Cyder*.

How to cast up
and Money an
Officer's Book.

The *Strong Beer* pays *Excise* 8s. and the *Small* 1s. 4d. per *Barrel*, and the *Cyder* 14s. 8d. per *Hogshead*; so that the *Excise* of the *Ale* comes to 52l. 8s. 0d; the *Small Beer* to 4l. 9s. 0d.; and the *Cyder* to 88l. 14s. 8d; all these *Sums* make 121l. 7s. 8d.

What the *Excise*
of *Ale*, *Small*
Beer, and *Cyder*,
and how the last
is to be charged
in the *Vouchers*.

N. B. Of the *Cyder* 6s. 8d. per *Hogshead* must be charged in the *Ale Voucher*, and 8s. per *Hogshead* in the *Malt Voucher*.

C H A P. IV.

SUBTRACTION of Decimal Fractions.

THIS is the very same with *Subtraction* of *whole Numbers* of one *Name* or *Denomination*, observing to place *Primes* under *Primes*, *Seconds* under *Seconds*, &c. as has been taught in *Addition*. And when that is done, you must take care to distinguish the *Fractions* from the *whole Numbers* (if any) by cutting off with a *Point* or *Dot*, as many *Places* to the *Right Hand* of the *Remainder* as there are in the *greatest Fraction*; and when you subtract a *Fraction* from a *whole Number*, you must annex as many *Cyphers* (or suppose them to be annexed) to the *whole Number* as there are *Decimal Places* in the given *Fraction*. The following *Example* makes this plain.

Fractions.	a <i>Mixt Number</i> .
From 48l.	586.
Take .275l.	.72845

Remains .205	585.27155
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In

Multiplication of Decimals. Part I.

In subtracting *Integers and Decimals*, observe the following Order.

Lent 1720.027	}	are	{	1730	0	6	1.92
Paid 1681.8352	}	equal to	{	1681	16	8	1.792

Remains 48.1918	48 03 10 0.128
-----------------	----------------

20

Shillings 3.8560

12

Pence 10.032

4

Farthings .128 Agreeing exactly with that on the *Right Hand*; for the *Decimal .1918* of a *Pound* is equal to *3s. 10d. 0q. 128*.

In subtracting of *Barrels, Gallons, and Decimal Parts*, as it is used in the *Excise*, observe the following Method.

	<i>Strong.</i>		<i>Small.</i>		<i>Cyder.</i>	
	B.	G.	B.	G.	H.	G.
Bought	41 $\frac{1}{2}$	4.2	17 $\frac{1}{2}$	5.6	60 $\frac{1}{4}$	10.4
Sold	29 $\frac{1}{2}$	7.8	13 $\frac{1}{2}$	6.7	53 $\frac{3}{4}$	12.8
Rem.	11 $\frac{1}{2}$	4.9	3 $\frac{1}{2}$	7.4	6 $\frac{1}{4}$	13.35

In *Addition* you carried 8.5 in the *Strong* and *Small* from the *Gallons* and *Decimal Parts*, to the *Fourths* of a *Barrel*, and in the *Cyder* 15.75: And here you borrow the same Quantities when you cannot otherwise subtract. As in the *Strong*, I cannot take 7.8 out of 4.2, therefore I borrow a *Quarter* of a *Barrel*, which is 8.5, and add it to 4.2: Which makes it 12.7. From this take 7.8 and there remains 4.9. The same is to be observed in the other *Examples*.

C H A P. V.

MULTIPLICATION of *Decimal Fractions*.

MULTIPLICATION of *Decimals* is the very same with that of *whole Numbers* in all Respects, whether both the *Factors** be *Decimal Fractions*, or whether they be *mixt Numbers*; only when the Work is done, we must distinguish the true *Product*, which is always known by cutting off to the *Right Hand* of the *Product* so many Places, as you have *decimal Places* in both the *Multiplicand* and *Mul.*

* The *Multiplicand* and *Multiplier* are usually called *Factors* by *Arithmeticians*.

Chap. V. Multiplication of Decimals.

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Multiplier; but if the *Product* doth not produce so many Places, the Defect must be supplied by prefixing so many Cyphers on the Left Hand the Product as will make the Places equal to those in both Factors.

How to find out the true Product.

Here are three Cases, which well observe.

CASE 1.

A Decimal Fraction multiplied by a Decimal Fraction.

Case 1.

Multiplicand	.864	And	.4078
Multiplier	.432	By	.2039
	1728		36702
	2592		12234
	3536		8156

Product 373248 8315042

CASE 2.

A Decimal Fraction multiplied by a Mixt Number.

Case 2.

Multiply	.864	And	.4078
By	4.32	By	20.39
	1728		36702
	2592		12234
	3456		8156

Product 3.73248 8.315042

CASE 3.

A Decimal Fraction multiplied by a Whole Number.

Case 3.

Multiply	.864	And	.4078
By	432.	By	2039.
	1728		36702
	2592		12234
	3456		8156

Product 373.248 831.5042

Tho' I have made use of the same Figures throughout each of these Examples, yet the Reader will find the Values of the Products are very different.

CONTRACTIONS IN Multiplication of Decimals.

It frequently happens in Business, that one or both the Factors consist of many Decimal Places, viz. of 12, 14, or sometimes more; so that to work them all would be very troublesome, and when done, but little to the Purpose; because fewer Number of Places may do the Business as well: Therefore use the following

RULE.

R U L E.

1. Transpose all the Figures of the Multiplier in a contrary Order to the common Way; viz. Let the Units Place stand to the Left Hand.

2. The Units Place of the Multiplier must stand under that Place of the Multiplicand, whose Decimal Place you intend to retain in the Product.

3. Begin as in common Multiplication, always having regard to the Increase of that Figure on the Right Hand, the Figure which stands over your Multiplier; making use of no more Places of your Multiplier than those which stand even with your Multiplicand to the Left Hand.

The following Examples will make this plain.

Let it be required to multiply 3.14159 by 24.8253, and to have four Decimal Places in the Product of the first Operation, three in the second, two in the third, and one in the fourth.

1.	2.	3.	4.
3.14159	3.14139	3.14159	3.14159
352842	352842	352842	352842
628318	62831	6283	628
125663	12566	1256	125
25132	2513	251	25
628	63	6	
157	16		
9		77.96	77.8
77.9907	77.989		

You see in the 4th Operation I take no more of the Multiplier than the 8 which stands even with the Multiplicand; the 3, 5 and 2 are dropp'd; in the 3d the 3 and 5; in the 2d the 3 only is omitted; but in the 1st Operation the whole Multiplier is taken in.

There are many Questions in Multiplication of Decimals, to which true Answers may be assigned according as the Integer is varied: Thus 3s. 11d. squared, a Pound being the Integer, the Answer will be 9d. 0.816541q. but if you make a Shilling the Integer, the Answer will be 15s. 4d. 0.333q. — So likewise if 1s. 6d. be squared, a Pound being the Integer, the Answer will be 1d. 1.4q. But put a Shilling for the Integer; the Answer is 2s. 3d. &c.

C H A P. VI.

DIVISION of Decimal Fractions.

YOU are to proceed in every respect, as if the Fractions were whole Numbers; tho' it may happen that the Dividend shall be less than the Divisor; and in this Case annex as many Cyphers to the Dividend as you think you shall want, and the Cyphers thus annex'd must be reckon'd as Decimals; when this is done, it only remains to know the true Value of the Quotient, which is always found by this

RULE.

R U L E.

1. Subtract the Number of Decimal Places in the Divisor, from the Number of those in the Dividend, and the Remainder is the Number of Decimal Places you are to cut off to the Right-Hand of your Quotient for Decimals, and those on the Left (if any) are whole Numbers.

2. If it happens that the Quotient does not contain so many Places as the Excess of Decimal Places of the Dividend above those of the Divisor, supply the Defect by prefixing so many Cyphers to the Left-Hand of your Quotient as will make up that Excess. See this done in the 4th Case following.

3. Further, Note, When you divide a whole Number by a whole Number, if any thing remains, annex Cyphers to that Remainder, and continue the Division; so will you have a Decimal in the Quotient of as many Places as you annexed Cyphers; and the whole Quotient thus found will be a mix'd Number.

4. There are NINE Cases, which take in the following Order; in which we shall use the same Figures, in both Divisor and Dividend, by which the Learner will easily acquire a true Notion of the Ground and Nature of Decimals.

CASE I.

Given, a whole Number to be divided by a whole Number.

579268.)314159265.(542.33837

N. B. Here five Cyphers are added to the Remainder, which produce five Decimal Places in the Quotient.

A whole Number by a whole Number.

The Operation.

579268.)314159265.00000(542.33837.

2896340
 2452526
 2317072
 1354545
 1158536
 1960090
 1737804
 2222860
 1737804
 4850560
 4634144
 2164160
 1737804
 4263560
 4054876
 Remains 208684

PART I.

C

CASE

CASE 2.

A whole Number by a mixt Number.

Given, a whole Number to be divided by a mixt Number.
 $579.268)314159265.0000(.542338.3$

Here you must add *three* Cyphers to the Right Hand of the whole Number in the Dividend, and then the Quotient will be a whole Number; and because there is a Remainder, you may go on again by adding Cyphers at Pleasure; so the Quotient will be a mixt Number.

CASE 3.

A whole Number by a Decimal.

Given, a whole Number to be divided by a Decimal Fraction.
 $.579268)314159265.000000(.542338373$

CASE 4.

A mixt Number by a whole Number.

Given, a mixt Number to be divided by a whole Number.
 $579268.)3.14159265(.00000542$
 ...

CASE 5.

A mixt Number by a mixt Number.

Given, a mixt Number to be divided by a mixt Number.
 $57.9268)3.14159265(.0542$
 ...

CASE 6.

A mixt Number by a Decimal.

Given, a mixt Number to be divided by a Decimal Fraction.
 $.579268)3.14159265(.542$
 ...

CASE 7.

A Decimal by a whole Number.

Given, a Decimal Fraction to be divided by a whole Number.
 $579268.)314159265(.000000542$
 ...

CASE 8.

A Decimal by a mixt Number.

Given, a Decimal Fraction to be divided by a mixt Number.
 $5.79268).314159265(.0542$
 ...

CASE 9.

A Decimal by a Decimal.

Given, a Decimal Fraction to be divided by a Decimal Fraction.
 $.579268).314159265(.542$
 ...

Note, In all the above nine Cases, except the first, the Operations at large are purposely omitted, to exercise the Learner, and to try his Ability.

Multiplication and Division infallibly prove each other; and if you would work any Example of Multiplication by Division, or any thing in Division by Multiplication, divide an Unit, with Cyphers annexed, by the given Multiplier, and the Quotient is the Divisor; by which, if you divide the given Multiplicand, that Quotient will be equal to the Product, &c.

Again, If you divide an Unit by the given Divisor, this Quotient will be a Multiplier; by which if you multiply the given Dividend, the Product shall be equal to the Quotient of that Dividend, when divided by its proper Divisor.

Of

Ch. VI. Division of Decimals.

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Of dividing Decimals a much shorter Way.

Because the Division of Decimals often proves tedious when it is required to continue the Quotient till the *Value* of the Remainder be *small*; therefore use the following *Rule*.

1. The *first Figure* of the *Quotient* must be of the *same Name* with *that Figure* in the *Dividend*, which stands (or is supposed to stand) over the *Unit's Place* in the *Divisor*.

2. By knowing the *Value* of the *first Figure* in the *Quotient*, you may have *as many* or *as few Places* of Decimals, as you please, by taking *so many* of the *Left-Hand Figures* of the *Divisor* as you will for the *first Divisor*, and then take *as many Figures* of the *Dividend* as will answer them: and in dividing omit *one Figure* of the *Divisor* at each Operation: A few *Examples* will make this plain. Let it be required to divide the *mixt Number* 3.14159265 by the *mixt Number* 57.9268, and retain *four Decimal Places*.

Now because the 7 in the *Unit's Place* of the *Divisor* falls under the 4, or *second Decimal Place* of the *Dividend*, I see (according to *Rule 1.* above) that there must be a *Cypher* to the *Left-Hand* of the *first Decimal Place* in the *Quotient*.

In the work, *subtract* 3 from 5, the *first Figure* 5 I call 6, for the *Increase* of the 9 cut off in the *Dividend*.

Example 1.

$$\begin{array}{r} * 57.92 \mid 68) 3.14159265(.0542 \\ \underline{28963} \\ 2452 \\ \underline{2317} \\ 135 \\ \underline{115} \\ 21 \end{array}$$

Example 2.

$$\begin{array}{r} .5792 \mid 68) .314159265(.5427 \\ \underline{28960} \\ 2455 \\ \underline{2317} \\ 138 \\ \underline{115} \\ 23 \end{array}$$

Example 3.

$$\begin{array}{r} 7.9863 \mid 82.157647(1.028 \\ \underline{79863} \\ 2294 \\ \underline{1597} \\ 697 \\ \underline{638} \\ 59 \end{array}$$

* I call the *Divisor* no more than 57.92, and the *Dividend* but 3.1415, having regard to the *Increase* of the *Figures* in the *Divisor* left out.

Contraction of Decimals. Part I.

☞ Tho' much labour may be saved by this Method, yet it is only useful when the Decimals in the *Dividend* contain many Places; and then take all the *Divisors*, and work as above is taught.

When you cannot have the *Divisors*, drop a Figure in the *Divisor*, which is done by putting a *Dot* under it; then with the *Remainder* of the *Divisor* proceed to divide the rest of the *Dividend*, as you may see by the Work.

Example 4.

$$\begin{array}{r}
 579268 \overline{) 3141592} \mid 65(.000000542 \\
 \underline{2896340} \\
 245252 \\
 \underline{231707} \\
 13545 \\
 \underline{11585} \\
 1960
 \end{array}$$

Questions in Division of Decimals admit of different Answers, according as the Integer is varied. As *suppose* 6d. be divided by 6d. a Pound the Integer, the Quotient will be 1l. and if 5s. 3d. $\frac{3}{4}$ be divided by 15s. 9d. $\frac{3}{4}$, the Quotient will be 6s. 8d. 2.5312q. but if a Shilling be the Integer, the Quotient will be 4d. 0.1268q.

C H A P. VII.

Of the single Rule of Three Direct, in Decimals.

IN this Rule there are always *three* Numbers given to find a *Fourth*, which bears such Proportion to the *Third*, as the *Second* doth to the *First*.

1. Observe always to put the Number that implies the Demand in the *Third* Place.

2. The *First* Number must be of the same Name with the *Third*.

3. Multiply the *Second* and *Third* Terms together, and divide that Product by the *First*, and the Quotient is the Answer to the Question; and will always be of the same Name with the second Number.

Example. If $12\frac{1}{2}$ Yards of Cloth cost 15s. 9d. what will $48\frac{1}{4}$ Yards cost at that Rate.

State it thus.

Yards.	l.	Yards.	l. s. d. q.
If 12.5 :	.7875 :	48.25.	Answer, 3 0 9 2.16.
			<i>Secondly,</i>

Ch. VIII: The Rule of Three Direct.

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Secondly, If in the same Question we make a *Shilling* the *Integer*, it will stand thus :

Yards. *s.* Yards: *l. s. d. q.*

If $12.5 : 15.75 :: 48.25$. Answer, 3 0 9 2.16.

Question II. If for 2*l.* 5*s.* 6*d.* $\frac{1}{4}$ I buy $2\frac{1}{2}$ Barrels of Ale, how many Barrels may I buy for 5*ol.* 10*s.* 3*d.* $\frac{3}{4}$?

l. *B.* *l.* Barrels.

If $2.27604167 : 2.5 :: 50.515625$. Answer, 55.486.

The same Question answered by putting a *Shilling* for the *Integer*, it will stand thus :

s. *B.* *s.* Barrels.

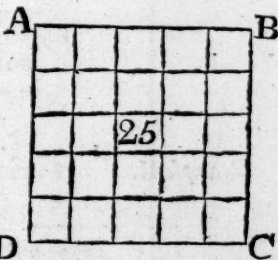
If $45.520833 : 2.5 :: 1010.3125$. Answer, 55.486, as before.

It is needless in this Place to say any thing of the *Inverse*, or any other *Proportions*, because they are of no Use here; you will find them sufficiently explained in the Use of the *Sliding Rule*.

C H A P. VIII.

Of the Extraction of the Square Root.

EXTRACTION of the Square Root, is finding such a Number that being multiplied by itself shall give the respective Power out of which the Root is to be extracted; as if 25 be proposed to be extracted, you will find its Root to be 5, for 5 Times 5 is 25; and this is Geometrically demonstrated by the Figure in the Margin, where each Side is divided into 5 equal Parts, by which the great Square ABCD is divided into 25 little Squares.



2. This Table of the Squares of the Digits with their respective Roots must be got by Heart.

Squares	1	4	9	16	25	36	49	64	81
Roots	1	2	3	4	5	6	7	8	9

3. Now to find out the Root of any Square proposed: Set down your Number, then draw a crooked Line on the Right-Hand thereof, in which set every Figure of the Root distinctly; then begin at the Unit's Place of a whole Number, over which put

C 3

a Dot,

a Dot, and so over every other Figure to the End of the proposed Number to be extracted; and so many Dots as there are, so many Figures you will have in the Root.

4. This done, see what is the nearest Square less than the first Period towards the Left-Hand of your given Number, and whatever you find it to be, place it in the Quotient, or Root: Square the Root (that is, multiply it by itself) and set it under the first Square; draw a Line and subtract; to this Remainder bring down the next Period or Pair of Figures; double the Root and place it on the Left-Hand for a Divisor, then see how often the Divisor can be had in the Resolvend (excepting the Figure to the Right-Hand;) and as often as you find it will go, place it in the Root, and also in the Unit's Place of the Divisor; multiply the last Root by the Divisor, and place the Product under the Resolvend; continue thus till all the Periods or Pairs of Numbers be brought down. And if any thing remain, annex two Cyphers, and work as has been taught above; and for every two Cyphers thus annexed there will be one Decimal Place in the Root.

Example I. Let it be required to extract the Square-Root of 2401?

$$\begin{array}{r}
 2401(49 \text{ Root.} \\
 16 \\
 \hline
 89)801 \\
 801 \\
 \hline
 0
 \end{array}$$

Here are four
Cyphers annexed,
which give two
Decimal Places in
the Root.

Example II.

$$\begin{array}{r}
 814602573.0000(28541.24 \\
 4 \\
 \hline
 48)414 \\
 384 \\
 \hline
 565)3060 \\
 2825 \\
 \hline
 5704)23525 \\
 22816 \\
 \hline
 57081)70973 \\
 57081 \\
 \hline
 570822)1389200 \\
 1141644 \\
 \hline
 5708244)24755600 \\
 22832976 \\
 \hline
 \text{Remains } 1922624
 \end{array}$$

If

Ch. VIII. of the Square Root.

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If you *square* the *Root*, and to that *Product* or *Square* add *Proof* of the *the Remainder* (if any) that Sum shall be equal to the *Num-ber* first given.

Example III. What's the *Square Root* of 436.5?

When your Number of *Decimal Places* are *odd*, as here, you must ever make them even by *annexing Cyphers*, as *Square Root* of 0,00,00,00,00, &c. to the *Right-Hand* of the given *Square*, a *mixt Square*. that so the *Dot* may fall over the *Unit's Place* of the *whole Number*.

See the Work. 436.50000000 (20.8925 Root.

$$\begin{array}{r}
 4 \\
 \hline
 408) 3650 \\
 \underline{3264} \\
 4169) 38600 \\
 \underline{37521} \\
 41782) 107900 \\
 \underline{83564} \\
 417845) 2433600 \\
 \underline{2089225} \\
 \text{Remains } 344375
 \end{array}$$

Example IV. Let the *Square Root* of 80 be sought?

A *Surd* whole Number given to be extracted.

Operation. 80.0000000000 (8.94427 Root.

$$\begin{array}{r}
 64 \\
 \hline
 169) 1600 \\
 \underline{1521} \\
 1784) 7900 \\
 \underline{7136} \\
 17884) 76400 \\
 \underline{71536} \\
 178882) 486400 \\
 \underline{357764} \\
 1788847) 12863600 \\
 \underline{12521929} \\
 \text{Remains } 341671
 \end{array}$$

In this Work I have annexed 10 *Cyphers*; so there is in the *Root* five *Decimal Places*; and when so done, there is a *Remainder* of 341671.

A *Surd Number* is that whose *Square Root* cannot be *exactly found*; tho' by *annexing Cyphers* as above, you may come *extremely* near the *Truth*, as in the above *Example*, where the *Root* is continued to five *Places* of *Decimals*.

C H A P. IX.

Of the Use of the Square Root.

THE Square Root is of excellent Use in most Parts of the Mathematics; but more especially in solving of Arithmetical and Geometrical Questions, which I shall exhibit as follows.

1. To find a Geometrical mean Proportional between any two given Numbers.

The R U L E.

Multiply the two given Numbers together, and extract the Square Root of the Product, you have the Answer sought.

Example I. What's the Geometrical mean Proportional between 4 and 6?

Here four Cyphers added, give two Decimals in the Root.

Operation.

$$\begin{array}{r}
 6 \\
 4 \\
 \hline
 24 \text{ (4.89)} \\
 16 \\
 \hline
 88) 800 \\
 704 \\
 \hline
 969) 9600 \\
 8721 \\
 \hline
 \end{array}$$

Remains 879

Example II. What's the Geometrical Mean between 20 and 30?
Answer, 24.49.

2. To find the Diameter of a Circle equal in Area * to an Ellipsis, whose Transverse and Conjugate † Axes are given.

The R U L E.

Multiply the two Axes of the Ellipsis together; and the Square Root of that Product is the Diameter of a Circle equal to the Ellipsis.

Example. Let the Transverse Axis of an Ellipsis be 36, and the Conjugate 23.5, what's the Diameter of an equal Circle?

$$\begin{array}{r}
 23.5 \\
 36 \\
 \hline
 \end{array}$$

$$1410$$

$$705$$

$$8460.0000 \text{ (29.108 Answer.)}$$

3. Any

* The Area of a Circle is the same with superficial Content.

† The Transverse and Conjugate Axes are the longest and shortest Diameters in an Ellipsis, and cross each other at Right Angles.

Ch. IX. Use of the Square Root.

25

3. Any two Sides of a Right-angled Triangle being known, the third may be easily found. By which, having the Bung and Head DIAMETERS of a Cask given, we can find the DIAGONAL Line, &c. contra.

By the 47th of the first Book of Euclid's Elements.

The R U L E.

Add the Square of half the Sum of the Head and Bung Diameters to the Square of half the Length, the Square Root of that Sum is the Diagonal of the Cask.

Example. Let 25 be the Bung, 22 the Head Diameter, and 30 Inches the Length of a Cask; what's the Diagonal Line?

Operation.

Head 22	Length 30
Bung 25	Half 15
	15

Sum 47	
Half 23.5	Square 225
23.5	

23.5

1175

705

470

Square 552.25

Add 225.

777.25 (27.87, the Diagonal.

4

47) 377

329

548) 4825

4384

5567) 44100

38969

5131

Note, The Contents of this Cask, if Spheroidal, in Ale Gallons is 48.3, and in Wine Gallons 58.9, as will be shewn in its proper Place.

4. The Area of a Triangle, Circle*, &c. being given, to find the Side of an equal Square.

5. The Side of a Square given, to find the Side of another Square that shall be 2, 3, 4, &c. times greater or less than the given Square.

6. Given the Diameter of a Circle, to make another 2, 3, or 4 times greater or less than the given Circle. Ad-

* Areas of Circles are in Proportion to one another as the Squares of their Diameters.

Use of the Square Root. Part. I.

Admit a Pipe of Lead, 1.5 Inches Diameter, will fill a Cistern in two Hours; I demand the Diameter of another Pipe that will fill the same Cistern in one Hour?

The R U L E.

Multiply the Square of the Diameter by 2, and the Square Root of that Product is the Answer.

Operation.

1.5

1.5

—

7.5

15

—

2.25

2

—

4.50 (2.12 Inches is the Answer.

4

—

41) 50

41

—

422) 900

844

—

56

An Example where the Solution is purposely omitted to try the Learner's Ability.

7. Given, the Circumference and Weight of a Fathom of Rope or Cable, to find the Weight of a Fathom of another Cable whose Circumference is also known.

The R U L E.

As the Square of the Circumference of the Cable given, is to the Weight of one Fathom, or any Part thereof; so is the Square of the Circumference of the Rope required, to the Weight of one Fathom, or any Part thereof.

8. Given, the three Sides of a right-lined TRIANGLE, to find its Area or superficial Content.

The R U L E.

Add the three Sides together, and from half the Sum, subtract each Side severally; then multiply the half Sum and three Differences together, the Square Root of the last Product is the Area required. Euclid 12. 2.

In Questions of this Nature, the Number of Persons is always supposed equal to the Sum which they spent per Piece.

9. Given, the Reckoning spent by a Company of Persons, to find out the Number of Persons, and what they spent a piece.

The R U L E.

Reduce the whole Reckoning in its lowest Name, and extract the Square Root of it, which gives the Number of Persons, and what

what they spent per piece, which is always of the same Name you reduced the given Sum into.

10. The *Square Root* is also useful in *embattling* of Soldiers in an Army; which being foreign to our present Design, we forbear to speak of it in this Place.

The *Cube Root* being of no Use in *Measuring*, and in *Gauging*, only for calculating *Diagonal Lines*; we say no more of it in this Place, but shall shew its Use upon the *Sliding Rule*. The Reason why the Cube Root is not taught here.

C H A P X.

A Description of the Sliding Rule.*

(See Plate A, facing the Title Page.)

THIS Instrument is commonly made of *Box*, and sometimes of *Ivory*, exactly a Foot long, 1 Inch and 2 Tenths broad, and $\frac{3}{4}$ of an Inch thick. It consists of four Parts, viz. A *Rule*, and three small *Scales* or *Sliding-pieces* fitted nicely with Grooves to slide in it.

The first marked BN, to slide by the Line A, the second marked CD to slide between the Lines D and E, and the third marked N, slides in the Edge of the Rule between the two Segments of a Circle; so that when the *Sliders* B and C are drawn out to their full Extent, the whole Rule will be three Feet long.

Of the first Face of the Rule.

1. On the first Face of this Instrument are placed four Lines of Numbers†; the first Line of Numbers consists of two Radius's‡, and is numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and then 2, 3, 4, 5, 6, 7, 8, 9, 10.

On this Line are placed several Brass Center Pins. The first in the first Radius at 2150.42, and the third likewise at the same Number taken in the second Radius, having MB set to them, signifying that the aforesaid Number represents the cubic Inches in a Malt Bushel. The second and fourth Center Pins are set at the Number 282 on each Radius; they have the Letter A set to them, signifying that the aforesaid Number 282 are the cubic Inches in an Ale Gallon. And the W on the Line B stands

* This Rule was first invented by Thomas Everard, Esq; in the Year of our Lord 1683, and made by Isaac Carver of Horslydown, near London. But the Rule here described is an Improvement on Everard's, mentioned in the 9th and 10th Editions of Everard's Gauging. Everard was then an Officer in the Excise at Southampton. See the first Edition of his Book.

† Mr. Gunter was the first who made the Line of Numbers from the Logarithms.

‡ Radius signifies the Semi-Diameter or Half-Diameter of a Circle.

stands at 231, being the *cubic Inches* in a *Wine Gallon*: You see it is placed both in the *first* and *second* Radius, the C in the same Line being placed at 3.14, which is the *Circumference* of a *Circle* whose *Diameter* is *Unity*.

The *fourth* Line, on the *first* Face, is a broken Line of Numbers of *two* Radius's numbered 2, 1, 9, 8, 7, 6, 5, 4, 3; 2, 1, 9, 8, 7, 6, 5, 4, 3. The Number 1 is set against MB of the *first* Radius of the Line A; this Line of Numbers hath MD set to it, signifying *Mali Depth*. Note, The little long black Dots over the *Center Pins* are put directly over the proper Numbers. This Line of Numbers hath A placed at the End thereof, and is called A for Distinction's Sake.

See the Menfuration of a Circle in the following Work, where you have these Numbers at large.

2. The *second* and *third* Line of Numbers which are on the *Sliding Piece* BN (and which may be called but one Line) are exactly the same with the *first* Line of Numbers. The little black Dot that is near the Division 7, on the *first* Radius, having Si set after it, is put directly over .707, which is the *Side* of a *Square* inscribed in a *Circle*, whose *Diameter* is *Unity*. The black Dot near the Figure 9, after which is written *Se**, is set directly over .886, which is the *Side* of a *Square* equal in *Area* to a *Circle* whose *Diameter* is *Unity*.

Of the second Face of the Rule.

Fig. 2.
How these Gauge Points are found and used will be shewn in the following Work.

3. The *second* Face of the Rule has one *single* Line of Numbers marked D, and numbered 1, 2, 3, &c. to 10. The Line C (on the *Slider*) is a double Line of Numbers of the same Length with the single one D; and by this on the *Slider* is the *single* Line of Numbers of D again repeated, which answers to the *Square* and *Cube Roots* of the Lines C and E. The WG on the Line D, being placed at 17.14, is the *Gauge Point* for *Wine*; and AG, placed at 18.94, is the *Gauge Point* for *Ale Gallons*. The MS, which stand at 46.37, is the *Gauge Point* for a *Malt Bushel* in *Square Measure*: And the MR, being placed at 52.32, is the *Gauge Point* for a *Malt Bushel* in *round or circular Measure*. The TP, which stand at 6.32, is the *Gauge Point* for a *Pound* of *Tallow* neat. The Line marked E, on the *second* Face of the Rule, is a *Triple* Line of Numbers, and is numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 1; which 1 stands for 10, the next Line being numbered 1, 2, 3, &c. to 10, which stands for 100, the *third* Line being numbered 1, 2, 3, &c. to 1000, having E after it, and therefore is called the Line E for Distinction sake; its Use is to find the *Cube Root* of any Number, and to calculate *Diagonal Lines* for any *Measure* or *Cask* whatsoever.

4. The *Two* Lines of Numbers which are on the *Sliding Piece* marked C, are exactly the same as on the *Sliding Piece* on the other Side the Rule. There is placed (upon some Rules) a black

* The two *Gauge Points* Si and Se, are sometimes put upon the Rule, and sometimes omitted.

black Dot at .0795 which is the *Area of a Circle* whose *Circumference* is *Unity*: And another black Dot at .785 being the *Area of a Circle* whose *Diameter* is *Unity*.

Of the third Face (or Edge) of the Rule.

Fig. 3.

On one Edge of the Rule are placed two Lines of Segments of a Spheroidal Cask, each numbered 1, 2, 3, &c. to 100; the first is for finding the Ullage of a Cask, taken as the middle Frustum of a Spheroid, lying with its Axis parallel to the Horizon, noted with Seg. Ly. and the other for finding the Ullage of a Cask standing, as noted with Seg. St. Between these Segments slides a Line of Numbers with a double Radius marked at the End with N; and at each End of the Slider there is a Brass Stud for Conveniency of moving it to and fro with your Thumb.

Of the fourth Face (or Edge) of the Rule.

Fig. 4.

5. On the opposite Face of the Rule is placed a Line of Inches from one to 12 decimally divided; next to this lyeth in a Line numbered with 1, 2, 3, &c. to 7, and at the End marked with Spheroid; by Help of which is found a mean Diameter for a Cask in the Form of the middle Frustum of a Spheroid. Next under this is a Line for finding the mean Diameter of a Cask in the Figure of the middle Frustum of a parabolic Spindle, which by Gaugers is called the second Variety of Casks; it is numbered 1, 2, 3, 4, 5, 6, and at its End is writ 2d Variety. Next under this lyeth a Line, by Help of which is found the mean* Diameter of a Cask of the third Variety; that is, a Cask in the Figure of two parabolic Conoids abutting upon a common Base; it is numbered 1, 2, 3, 4, 5, and at the End thereof is writ 3d Variety.

Of the three Sliding Pieces.

Fig. 5 and 6

6. The above are all the Lines on the four Sides of the Rule; but on the Inside of the two Sliding Pieces is a Line of Inches from 13 to 36, when the two sliding Pieces are put end-ways together; and against that the corresponding Gallons or hundred Parts,

* That is, a mean Diameter which reduceth a Cask into a Cylinder; this Diameter is always more than the Head, and less than the Bung Diameter.

† Mr. Vero, some time a Collector of the Excise, made an Alteration in Everard's Sliding Rule; so that the whole Length of one Foot contained but one single Radius of the Line of Numbers, and both Sliders work together on one Side of the Rule in every Operation; by which Contrivance the Divisions in this Rule are twice as large as on those first made by Mr. Everard. And on the narrow Face of this Rule of Mr. Vero's is a Foot divided into 100 equal Parts, every ten of which are numbered; F M stands at the Beginning of it, signifying Foot Measure. Under this is a Line of Inches, each being divided into ten equal Parts, having I M at the End thereof, signifying Inch Measure. Next to this is a Line for finding the mean Diameter for the fourth Variety of Casks or the middle Frustum of two Cones abutting upon one common Base. It is numbered 1, 2, 3, 4, 5, 6, and at the End thereof is writ F C, signifying Frustum of a Cone.

Of the Use of
the Sliders.

Fig. 7.

Parts, that any small Tub, or such like open Vessel (from 13 to 36 Inches Diameter) will contain at *one Inch deep*. Its Construction will be shewn in its proper Place. These are commonly called (by the Gaugers) the *Ale Areas*. And by drawing out the *first Slider*, any open Vessel's Diameter under 24 Inches may be taken, and its Area in Ale Gallons is shewn by Inspection. If the Tub be more than 24, and less than 36 Inches Diameter, then pin the *first Slider* fast, and draw out the *other Slider*, and you have the Diameter in Inches and Decimal Parts of an Inch of that Tub, with the *Ale Area* answering to that Diameter by Inspection.

The *Inside* of the little Slider marked N. \odot is for reducing Casks in the Form of the *Frustrum* of a Cone, to a Cylinder; as suppose the Difference between Head and Bung of a Cask be 5.3, seek this in the *Line of Inches*, and against it you will find 3.4, which add to the Head Diameter, and it reduces the Cask to a Cylinder.

How the Lines on the Sliding Rule are made.

1. All the *Lines of Numbers* above described are made by one General Rule, which is this: Get a Plate of any good Metal, as Brass, Copper, &c. of what Length you design your Line to be, and thereon draw three parallel Lines, for the better distinguishing the Divisions of the Line of Numbers, and make a Mark for the Beginning of it. Close by these three parallel Lines draw ten other parallel Lines, and divide this into 10 equal Parts; one of which subdivide into 100 equal Parts, which makes it a Diagonal Scale of 1000 equal Parts. Being thus prepared, look into the Table of Logarithms* for the Number 200, and against it you will find the Logarithm 2.301030: Rejecting the Characteristic 2, and also the three last Figures to the Right-Hand 030, because the Length of the Radius is divided but into 1000 equal Parts; take 301 (from your Diagonal Scale) in your Compasses, and lay off that Distance from the Beginning of the Line of Numbers, and there place the Figure 2 for the first Prime. Again, to find the Division for the second Prime, look into the Table of Logarithms for the Number 300, and you will find its Logarithm to be 2.477121, reject the Characteristic 2, and also the three last Figures to the Right-Hand, and take in your Compasses from your Diagonal Scale (as before) the Number 477, and lay off that Distance from 1, at the Beginning of the Line of Numbers to 3 for the second Prime; and so by proceeding thus, you will compleat all the Prime Numbers of one Radius of your Line of Numbers: And for your better Help, I shall here insert the Logarithms, with the Numbers themselves that are to be taken from your Diagonal Scale.

Numbers

* Logarithms are a Series of artificial Numbers, invented for the Ease and Expedition of Calculation, proceeding in an Arithmetical Progression, as the Numbers they answer do in a Geometrical one.

Numbers	200	Logarithms	2.301030	Numbers to be taken from your Diagonal Scale.	301
	300		2.477121		477
	400		2.602059		602
	500		2.698970		699
	600		2.778151		778
	700		2.845098		845
	800		2.903089		903
	900		2.954254		954
	1000		3.000000		The whole Radius

of your Diagonal Scale = 1000.

The Divisions of the *Tenths* between each of the *Primes* are found thus: Look in the Table of *Logarithms* for 11, or for 110 (it matters not which, because 1 at the Beginning of the Line and one Tenth is 11) and take out its *Logarithm* .041393 (omitting the *Characteristic* and the three last Figures) and there will remain .041, which take from the *Diagonal Scale*, and set from 1 to one Tenth, on the Line of Numbers: Again, look into the Table for 12 or 120, and against it you will find .079181; take 79 from your *Diagonal Scale*, and set from 1 to the second Tenth in the first Prime: Proceed thus for all the intermediate Divisions in the Line of Numbers: But for your better Information, I shall insert the following Table.

A Table for dividing the Line of Numbers to any given Radius.

N ^o .	Log	N ^o .	Log	N ^o .	Log	N ^o .	Log	N ^o .	Log
1	00	21	322	41	612	61	785	81	908
2	30	22	342	42	623	62	792	82	914
3	47	23	362	43	633	63	799	83	919
4	60	24	380	44	643	64	806	84	924
5	70	25	398	45	653	65	813	85	929
6	78	26	415	46	663	66	819	86	934
7	84	27	431	47	672	67	826	87	939
8	90	28	447	48	681	68	832	88	944
9	95	29	462	49	690	69	839	89	949
10	100	30	477	50	700	70	845	90	954
11	041	31	491	51	707	71	851	91	959
12	079	32	505	52	716	72	857	92	964
13	114	33	518	53	724	73	863	93	968
14	146	34	531	54	732	74	869	94	973
15	176	35	544	55	740	75	875	95	978
16	204	36	556	56	748	76	880	96	982
17	230	37	568	57	756	77	886	97	987
18	255	38	580	58	763	78	892	98	990
19	279	39	591	59	771	79	898	99	996
20	301	40	602	60	778	80	903	100	1000

This Table is taken from the Table of *Logarithms*, as has been shewn above.

Shewing how
the Malt Line is
put on the Rule.

Shewing how
the Line of Seg-
ments is put up-
on the Rule.

2. The *Line* called the *Malt Depth*, marked M D, is no more than the *Line of Numbers* turned the contrary Way, and is so ordered that the Number 1 on M D may stand *exactly even* or right against N B on the Line A, and then all the other Divisions will fall in their true Places. By this means any Number on A or B, multiplied by any Number *directly* under it on the Line M D, will always be equal to 315150.42, the Number of *Inches* in a *Malt Bushel*.

3. The *Line of Segments* for the middle *Frustrum* of a *Spheroid* lying, may be put upon the *Sliding Rule* in the following Manner: Take some Vessel lying, as a *Butt*, and fill it full of Water, then find its Content in *Ale* or *Wine Gallons*, (for it matters not which) take also its *Bung Diameter* in *Inches* and *Decimal Parts*. Now to find against what Number, on the Line of Numbers of the *Sliding Piece*, any Division of the *Line of Segments* must stand; suppose the Division 1, I say, As *Unity* is to .01, so is the Content of the aforesaid Vessel in *Gallons* to a *fourth Number*, which will be the *Gallons*, or *Gallons* and *Parts* that are contained in such a *Segment* of the Vessel; as .01 is of a *similar* Vessel, whose *Area* is supposed *Unity*; then let out of the Vessel as many *Gallons* as that *fourth Proportional* directs, and having taken the *dry Inches*, say, by the Rule of *Three Direct*, As the *Bung Diameter* is to those *dry Inches* found, so is 100 to a *fourth Number*; which will be the Number on the *Line of Numbers* marked N, against which the *Division 1*, on the *Segment Line*, must stand. Again, to find where the *Division 2* must stand on the *Line of Segments*, say, As 1 is to .02, so is the Content of the aforesaid Vessel to the *Gallons* that must be taken out of it; then say, As the *Bung Diameter* is to the *dry Inches*, so is the 100 on the Line N, against which the *Division 2* must stand. Proceed in this Manner for finding the *Divisions 3, 4, 5, 6, 7, 8, 9*, and when you come to find where the *Division 10* must stand, you must say, As *Unity* is to the *Vessel's Content*, so is 1 to the Number of *Gallons* to be taken out of the Vessel; and go on as before.

Moreover, to find where the *Division 20* must stand, say, As 1 is to the Content, so is 2 to the Number of *Gallons* to be taken out of the Vessel, &c. In this Manner may the *Divisions* to 100 be found.

To find where the *first Subdivision* before 1 must stand, say, As 1 is to the *Vessel's Content*, so is .002 to the Number of *Gallons* to be let out of the Vessel, and proceed as at first directed. And for the *second Subdivision*, make .003 the *third Term* of the Rule of *Three*, and proceed as before. For the *Subdivisions* between 1 and 2, 2 and 3, &c. Suppose 1 to be .0100, then the *first Division* from 1 will be .011, the *second* .012, the *third* .013, &c. which must be made the *third Term* of the first Rule of *Three*, for finding where any of those *Subdivisions* must stand. And for the *Subdivisions* between 10 and 20, 20 and 30, you must suppose 10 to be .10, and 20 to be .20; then the *first Subdivision*

Subdivision from 10 will be .11, the *second* .12, the *third* .13, &c. which will be the third Term in the *Rule of Three*, for finding where these *Divisions* must stand.

LASTLY, The other *Segment Line* on the same Face of the Rule, may be made in the same Manner as this, by setting the aforesaid Vessel *upright*, and making Use of the *Length* instead of the *Bung Diameter*. For the Line of Segments for Standing Casks.

4. The *Constructions* of the Lines on the other *Edge* of the Rule for the four *Varieties* of Casks, are thus. 1. For the *Spheroid*: Half the *Difference* of the *Squares* of the *Bung* and *Head Diameter*, added to the *Sum* and *Half Sum* of the said *Squares*, divided by 3, will be the *Square* of the mean *Diameter* for a *spheroidal Cask*, the *square Root* of which will be the mean *Diameter*. 2. *Three Tenths* of the *Difference* of the *Squares* of the *Bung* and *Head Diameters*, added to the *Sum* and *half Sum* of the said *Squares*, and the *whole* divided by 3, will be the *Square* of the mean *Diameter* of a *Cask* of the *second Variety*. 3. To the *Sum* and *half Sum* of the *Squares* of the *Bung* and *Head Diameters*, add one *Tenth* of the *Difference* of the said *Squares*; that *Sum* divided by 3, gives the *Square* of the mean *Diameter* of a *Cask* of the *third Variety*. And lastly, From the *Sum* and *half Sum* of the *Squares* of the *Bung* and *Head Diameters*, subtract half the *Square* of the *Difference* of the *Diameters*, and the *Remainder* divided by 3, will be the *Square* of the mean *Diameter* of a *Cask* of the *fourth Variety*, commonly called the *Frustums* of two *Cones* abutting upon a common *Base*. The Lines for the 4 Varieties of Casks.

12. The *Insides* of the two *Sliders* are divided into *Inches*, and every *Inch* into 10 *equal Parts*; the other *Line* which lyeth by the *Side* of the *Line of Inches* is the *Area* in *Ale Gallons* and *Decimal Parts* of a *Gallon*; which by the *Rule* are made thus, viz. How the Inside of the two Sliders are divided.

Set *Unity* on *C*.

To *A. G.* the *Ale Gauge Point* upon *D*.

And against any *Diameter* on *D*.

Is the *Area* in *Ale Gallons*, and *Decimal Parts* of a *Gallon* upon *C*. How to find the Ale Area.

So as the *Rule* now stands, it is a *Table* for all *Diameters* whatsoever.

Note, The *Gallons* are put in *large Figures*, and the *Tenths* of a *Gallon* in *smaller Figures*; every *Tenth* of a *Gallon* is divided into five by a *small Division*, every one of which signifies two hundred *Parts* of a *Gallon*. By which it appears, as the *Rule* now stands, that a *Tub* of 19 *Inches Diameter* will hold a little more than one *Gallon* upon an *Inch* deep; and 24 *Inches Diameter* gives for the *Area* 1 *Gallon* and 6 *Tenths*; 30 *Inches Diameter* gives 2 *Gallons* and a *half*, and 36 *Inches Diameter* gives 3 *Gallons* and 6 *Tenths* of a *Gallon* for the *Area*, or what such a *Vessel* holds at one *Inch* deep; this in the *Gauger's* Phrase is called the *Area*.

13. Construction of the four Feet Gauging Rod.

Of the four Feet
Gauging Rod.

Of the Line of
Ale Areas.

Of the Diagonal
Lines.
See Plate 4,
Fig. 3.

How the Diagonal
Line is made
for Ale.

An Example of
Ale.

See Plate 1. Fig.
13, which is the
same, only it is
but 3 Feet long.

An Example of
Wine.

1. This Rod*, whose Use is to find the Quantity of Liquor contained in any Kind of Vessel, is usually made of Box-wood, and consists of four Rules, each a Foot long, and about $\frac{1}{2}$ an Inch square, join'd together by three Brass Joints; by which means the Rod is rendered four Feet long, when the four Rules are quite opened, and but one Foot when they are folded together.

2. On the first Face of this Rod is a Line of Inches placed, (and sometimes with it a Line of Ale Areas) decimally divided; whose Use is to take Gauges of Ale, Wine, Malt, &c.

3. Two diagonal Lines are placed near the Line of Inches, one for Ale, and the other for Wine, to find the Content of any Spheroidal Cask, by putting the Rod in at the Bung of the Vessel till the Intersection of the Head of the Vessel meet with the Staves opposite to the Bung-Hole, so that B F is the Diagonal Line.

4. By the Bung, Head, and Length of a Cask we find its Content, in Ale and Wine Gallons, and also the Casks diagonal Line, as has been shewn in Page 25. For

As the Content of any Cask in Ale or Wine Gallons,
Is to the Cube of its Diagonal;
So is the Content of any other similar Cask,
To the Cube of its Diagonal.

Example I. for A L E.

Let it be required to find, by the four feet Gauging Rod, the Length of the Diagonal Line of a spheroidal Cask, whose Content is 10 Ale Gallons?

Say, as 48.3 the Content in Ale Gallons, is to the Cube of its Diagonal 21647.657403, so is 10 Gallons to 4481.91664, whose Cube Root is 16.44 the Answer.

So that at 16.44 Inches upon the Four Feet Gauging Rule, you place 10 Ale Gallons: But this is performed more expeditiously by the Sliding Rule, thus:

Set 27.8 on D, to 48.3 on E, and as the Rule now stands, it is a Table; so that against any Number of Gallons on the Line E, you have on the Line D, the Length of the Diagonal in Inches and decimal-Parts: Thus,

If the Contents in Ale Gallons be 10 20 30 40
The Diagonal Line will be 16.44 20.8 23.8 26.25

Example II. for WINE.

Let the Dimensions of a Spheroidal Cask be as above, the Content in Wine Gallons will be 58 97: then for the Diagonal, set

* There is a four Feet Gauging Rod contrived by Mr. Branan, some time a Collector of the Excise, which also serves for a Sliding Rule; the middle Joint is made with a Socket to take in and out; so that when each two Feet is shut (they are made with the common Gauging Lines on them) they slide one by the Side of the other; and it answers every Purpose of the Sliding Rule above described.

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set 27.8 on D, to the Content 58.97 on F, and as the Rule now stands you have the Wine Diagonal for a Spheroidal Cask.

Thus,
If the Content in Wine Gallons be 10 20 30 40
The Diagonal Line will be 15.32 19.32 22.1 24.36

And so the Rule will shew you the Diagonal answering for any other Quantity.

5. Lines adapted to London Casks* are placed on the other Faces of this Four Feet Gauging Rod, viz. 1. A Line for a Butt standing. 2. For a Butt lying; each of which contains 108 Gallons, Beer Measure. 3. A Line for the Hoghead containing 54 Gallons. 4. A Line for the Barrel of 36 Gallons. 5. A Line for a Kilderkin of 18 Gallons. 6. A Line for a Firkin of 9 Gallons. Then to gauge any of these London Casks, there is no more to do than to put in your Rod perpendicular at the Bung, &c. and if the Cask is not full it gives you the Ullage † without any farther Trouble.

6. For the same Purpose there are also Lines put on Four Feet Gauging Rods for Wine Measure; as 1. A Ton of 252 Gallons. 2. A Butt of 126 Gallons. 3. A Puncheon of 84 Gallons. 4. A Hoghead of 63 Gallons. 5. A Tierce of 42 Gallons. 6. A Barrel of 31½ Gallons. 7. A Rundlet of 18 Gallons. And lastly, an Anchor of 9 Gallons: By these Lines all Brandies and Oils are gauged.

7. These Lines for London Casks are made, by setting the Vessel level, and pouring in one Gallon of Water, and then put the Rod downright into the Bung-hole (if it is a lying Cask;) or at the Head (if a standing Cask) and where the Surface of the Water cuts the Rod, make a Mark or Division for one Gallon, then pour in another Gallon, and where the Surface of the Water cuts the Rod, make the Division for two Gallons: Again, pour in another Gallon, and where the Surface of the Water cuts the Rod, make the Division for three Gallons: Proceed thus, by pouring in one Gallon successively after another, and make Divisions at every Place on the Face of the Rod, to which the Water rises till the Cask be full; and then you have the Scale for that Cask properly divided. Proceed in the same manner for every one of the London Casks above mentioned, and all the Lines will be finished when figured.

How those Lines for London Casks are made.

Note, The Divisions for Quarts, marked by Dots on the Rod, are made by pouring in a Quart of Water successively, and that you may never be at a Loss to know what Cask is in Hand, the Rod will shew you; for by measuring the Depth of the Bung.

D 2


&c.

* Note, The Dimensions of the London Casks are established by Act of Parliament; The Coopers dare not make the Cask otherways, on a Penalty of 3s. 4d. for every Offence. Stat. Hen. VIII.

† The Ullage of a Cask is what remains therein, after any Part is drawn off.

Numeration on the Rule. Part I.

£c. if it cut 36, 'tis a *Barrel*, if 18 Gallons 'tis a *Kilderkin*, *£c.* and by the *Line* for that *Cask* you must take its *Ullage*.

 The Gauging Rod, *Plate 1. Fig. 13.* is only 3 Feet, or 36 Inches long; it is *decimally divided*, and has two *Diagonal Lines*, one for *Ale*, and the other for *Wine*; their *Construction* is shewn in *Page 34*.

C H A P. XI.

Of Numeration on the Sliding Rule.

See *Plate A.*
Fig. 1.
How to number
on the *Rule*.

See *Plate A.*
Fig. 1.

Another Way of
conceiving how
to number on the
Rule.

THE *Lines of Numbers* upon the *Sliding Rule* are laid down from the *Logarithms*, as has been shewn in *Page 30*, and are composed of a *single* or *double Radius*; and the several *Lines* are marked at the *End* with *A, B, C, D, N, £c.* For *Distinction* Sake, each *Radius* is divided into *nine* equal *Parts* in a *geometrical Proportion*, and figured *1, 2, 3, 4, 5, 6, 7, 8, 9*, called *Primes*, whose *Significations* are *arbitrary*. These *Divisions* are again divided (when the first *Divisions* are large) into *five* equal *Parts*, called * *Centesms*. Now the first *Figure* at the *Beginning* of the *Rule* to the *Left-hand* may represent either *.1, 1, 10, 100, 1000*, and the same *Figure* in the *Middle* of the *Rule*, if a *double Radius*, may represent *1. 10. 100. 1000. 10000*, and at the *End* to the *Right-hand* it may represent *10. 100. 1000. 10000. 100000. or 1000000*, encreasing in a *Ten-fold Proportion*; and the like may be said of the *intermediate Divisions*.

Again, The *Method of Numeration* upon the *Sliding Rule* may be conceived by this *single Consideration*, viz. that what *Name or Denomination* soever the *1* at the *Beginning* of the *Line* is of, the *1* in the *Middle* of the *Line* will represent *ten times* as many; and the *1* at the *End* of the *Line* will represent *an hundred times* as many: So that if this be but well understood, it will not be difficult to conceive the *Meaning* of the *intermediate Figures and Divisions*. For

If the <i>Figure 1</i> be consider'd it may represent	$\left\{ \begin{array}{l} .1 \\ 1. \\ 10. \\ 100. \\ 1000. \end{array} \right.$	$\left\{ \begin{array}{l} \text{and the} \\ \text{larger} \\ \text{Division} \\ \text{will re-} \\ \text{present} \end{array} \right.$	$\left\{ \begin{array}{l} .01 \\ .1 \\ 1. \\ 10. \\ 100. \end{array} \right.$	$\left\{ \begin{array}{l} \text{and then} \\ \text{the smal-} \\ \text{ler Divi-} \\ \text{fions will} \\ \text{represent} \end{array} \right.$	$\left\{ \begin{array}{l} .002 \\ .02 \\ .2 \\ 2. \\ 20. \end{array} \right.$
---	---	--	---	---	---

Upon *Sliding Rules* of a *Foot* long, these *Divisions* are usually placed from *1* to *3*.

* *Centesm* is a hundredth Part.

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From 2 to 5 upon the Rule, the *Tenths* (or greatest Division) are only divided into two geometrical Parts, called *Centesms*. Then,

If you consider the Figure 2, it may represent

$\left\{ \begin{array}{l} .2 \\ 2. \\ 20. \\ 200. \\ 2000. \end{array} \right\}$	and the larger Divisions will represent	$\left\{ \begin{array}{l} .01 \\ .1 \\ 1. \\ 10. \\ 100. \end{array} \right\}$	and the smaller Divisions will represent	$\left\{ \begin{array}{l} .005 \\ .05 \\ .5 \\ 5. \\ 50. \end{array} \right\}$
--	---	--	--	--

From 5 to 10 upon the Rule, the *Primes* are divided into Ten Parts only, and the *Centesms* must be estimated. For

If 5 be considered, it may represent

$\left\{ \begin{array}{l} .5 \\ 5. \\ 50. \\ 500. \\ 5000. \end{array} \right\}$	and then the larger Divisions will represent	$\left\{ \begin{array}{l} .01 \\ .1 \\ 1. \\ 10. \\ 100. \end{array} \right\}$
--	--	--

Example I.

Let it be required to find any Number on the Line A, as An Example on suppose 2.15042, 21.5042, or 2150.42: Here observe, that Line A. 1 at the Beginning being accounted as Unity, then 2 will be 2, and the first grand Division will be 1, and the small Division will be 50, so that the 42 must be estimated, it being but a very little more than the small Division or *Centesms*.

Example II. If 21.5042 be required?

This will also be found at the same Point; for taking the A 2d Example. first Figure for 10, the 2 will be 20, and the intermediate Divisions will encrease in a Ten-fold proportion, viz. the *Tenths* to *Units*, and the *Centesms* to *Tenths*, &c.

Example III. If 2150.42 be required to be found on the Rule.

The first Figure must be taken for 1000, then will 2 be A 3d Example. 2000, and the first grand Division after the 2 will be 100, the small Division 50, and the 42 must be guessed at; so that 2.15042, 21.5042 and 2150.42, all fall at the same Point, M.

Again, If the Number 1.894, or 18.94, or 1894 or 189.4 be required on the Line D, any of these Numbers will answer the Point A G, for the Reasons above-mentioned.

Lastly, If .785 or 7.85 or 78.5 or 785. were required to be found on the Line C, they will all fall at the same Point, it being the Area of a Circle whose Diameter is Unity.

Here note, that the Distance between the Figures 7 and 8 being divided into 10 Geometrical Parts, the Third Figure, viz. 5, is supposed to be in the Middle between two such Divisions, and therefore equal to .05. if the Divisions be *Tenths*; or .5 if the Divisions be *Units*. If the Number had been 784, something less than half the Space must have been taken; if 786, something more.

These Things being well considered, it will be easy to find any Number required in Practice, on the Rule; my next Business shall be to shew how to work with Numbers on the Rule.

CHAP. XII.

ULT

MULTIPLICATION on the Sliding Rule.

Of Multiplication on the Rule.

LOGARITHMS perform by Addition and Subtraction what common Numbers do by Multiplication and Division: and the Sliding Rule, at once setting, gives a Variety of Products at one View: Observing this

RULE.

How to multiply on the Rule.

Set Unity, or 1, on either of the Lines A or B, to either Factor* on the Line of Numbers, on either A or B, and against the other Factor on the same Line you had Unity, is the Product on that Line you had the first Factor.

Example, Let the Product of 6 by 7 be sought.

Operation.

An Example.

Set 1 upon B, to 6 upon A, and against 7 upon B is 42 upon A, the Answer.

Or set 1 upon A, to 6 upon B, and against 7 upon A is 42 upon B, the Product sought. It is immaterial which Line you take Unity upon, so you have regard to take the Second Factor on the same Line you had Unity, then your Product will always be found upon that Line you had the First Factor on. And for the Learner's Improvement, the following Examples in Decimals, with their respective Products, are inserted.

Several Examples for Practice.

If you multiply	{	7.3	}	by	{	20.2	}	the Products will be	{	147.5	}
		5.7				13.5				77.	
		9.5				7.6				71.4	
		4.2				16.9				71.	
		6.8				13.1				89.1	
		14.3				15.7				224.5	
		1.5				33.8				50.7	
		18.6				6.2				115.3	
		3.3				25.4				83.8	
		8.9				9.3				82.8	
		7.7				12.9				99.3	
		27.1				5.5				149.1	
		2.7				6.8				18.4	

CHAP.

* The Multiplicand and Multiplier are usually called Factors.

C H A P. XIII.

Of Division on the Sliding Rule.

MULTIPLICATION and Division are a Proof of Division on each other; and the Sliding Rule is an excellent Proof of the Rule. of any thing that is done in practical Mathematicks by Numbers: For if the Product of any two Factors be divided by either of them, the Quotient will be the other Factor, as appears by the following Examples.

The R U L E.

Set Unity, or 1, on either of the Lines A or B, (it matters not which) to the Divisor on the other Line. How to multiply by the Rule.

And against the Dividend on the same Line you had the Divisor, you will have the Quotient on the same Line you had Unity.

Example. Let the Quotient of 42 divided by 6 be required. An Example. Operation.

Set 1 upon B, to 6 the Divisor upon A, and against 42 the Dividend upon A, is 7 the Quotient upon B.

Or,

Set 1 upon A to 6 upon B, and against 42 upon B, is 7 upon A, the Answer required.

After this Manner examine the following Examples, which are the Products in the foregoing Chapter divided by their Multipliers.

Divide	147.5	by	7.3	and the Quotients will be	20.2	Several Examples for Practice.
	77.		5.7		13.5	
	71.4		9.4		7.6	
	71.		4.2		16.9	
	89.1		6.8		13.1	
	224.5		14.3		15.7	
	50.7		1.5		33.8	
	115.3		18.6		6.2	
	83.8		3.3		25.4	
	82.8		8.9		9.3	
	99.3		7.7		12.9	
	149.1		27.1		5.5	
	18.4		2.7		6.8	

C H A P. XIV.

Of the single Rule of Three Direct, on the Sliding Rule.*

Of the Rule of Three on the Sliding Rule. **I**N Numbers the *First* and *Third* Terms must be of *one Name*, and here upon the *Rule*, the *first* and *third* Numbers or Terms, must always be had upon the *same Line* A or B; and the *second* and *fourth* Terms must be found on the *other Line* either A or B, it matters not which: And that you may fully understand to work any *Proportion* on the *Sliding Rule*, observe this

The Rule.

General Rule.

*As the first Term upon A,
Is to the second Term upon B,
So is the third Term upon A,
To the fourth Term upon B.*

That is, set the *first* Term upon A to the *second* upon B, and against the *third* Term upon A, is the *Answer* upon B, &c.

Or,

*As the first Term upon B,
Is to the second Term upon A,
So is the third Term upon B,
To the fourth Term upon A,
Which is the Answer sought.*

An Example. *Example.* If 8 Yards of Cloth cost 32s. what will 20 Yards cost at that Rate?

Operation.

A	B	A	B.
As 8	is to 32	so is 20	to 80.
B	A	B	A.
As 8	is to 32	so is 20	to 80.

Here you see the *first* and *third* Terms are taken upon the *same Line*, and the *second* and *fourth* are found upon the *other*; and

* *Note*, The Sliding Rule is useful to those skill'd in *Astronomy*, as I have mentioned in my *System*, Vol. 1. Page 317. Of this take the following *Example*.

Admit the *Moon* move $13^{\circ} 36'$ in *one Day*, or 24 Hours, how much will she move in 10 Hours, 24 Minutes.

A.	B.	A.	B.
h.	o.	h.	o.

As 24 : 13 36 : : 10 24 : 5 54.

Note, From 1 to 2, on the Line A, every grand Division is 6 Minutes; and every small Division is 12 Seconds, but from 2 to 5, every small Division is 30 Seconds; and from 5 to 10 every small Division is 6 Minutes; and from 10 to 20, every small Division is 12 Minutes; but from 20 to 24, every small Division is 30 Minutes; and thus by observing the *Numeration* on the Rule, it answers to the *Logistical Logarithms* in any Case, with great Expedition, as I have proved in my *Astronomical Calculations*.

Chap. XV. Rule of Three Inverse.

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and in both Operations the same is observed ; which being well understood, you may work any *Proportion* whatsoever.

Here follow some *Examples*, for Practice.

A.	B.	A.	B.
As $\left\{ \begin{array}{l} 7.8 \\ 12.4 \\ 4.9 \\ 15.5 \end{array} \right\}$	is to $\left\{ \begin{array}{l} 5.4 \\ 21.7 \\ 13.5 \\ 27.5 \end{array} \right\}$	so is $\left\{ \begin{array}{l} 11.2 \\ 8.8 \\ 26.3 \\ 48.1 \end{array} \right\}$	to $\left\{ \begin{array}{l} 7.75 \\ 15.4 \\ 72.4 \\ 83.3 \end{array} \right\}$

More Examples for Practice.

CHAP. XV.

Of the Rule of Three Inverse on the Sliding Rule. Of the Rule of Three Inverse.

Reciprocal, or *inverse* Proportion, is when the *first Term* bears the same Proportion to the *third*, as the *second Term* does to the *fourth*.

1. Of SINGLE Proportion.

As the third Term upon A,

Is to the first upon B,

So is the second Term upon A,

To the fourth upon B, & contra.

Example. If 12 Men can do a Piece of Work in 18 Days, An Example. how long will 6 Men be in doing the same ?

Operation.

Men Men Days Days
As 6 is to 12 so is 18 to 36.

More Examples for Practice.

Several Examples for Practice.

A. Men	B. Men	A. Days	B. Days
As $\left\{ \begin{array}{l} 12 \\ 18 \\ 36 \\ 48 \\ \text{Men} \\ 2 \end{array} \right\}$	is to $\left\{ \begin{array}{l} 6 \\ 36 \\ 18 \\ 12 \\ \text{Men} \\ 8 \end{array} \right\}$	so is $\left\{ \begin{array}{l} 36 \\ 6 \\ 12 \\ 8 \\ \text{Days} \\ 12 \end{array} \right\}$	to $\left\{ \begin{array}{l} 18 \\ 12 \\ 6 \\ 2 \\ \text{Days} \\ 48 \end{array} \right\}$

Or, if you state the Question as in common Arithmetic, so Of stating the that the *Supposition* may lie in the *two first Terms*, and the Question. Demand in the *Third*, the *First* and *Third* being of *one Name*, the *fourth Term* or *Answer* will be of the *same Name* with the *second* or *middle Term* ; then multiply the *first* and *second Terms* together, and divide the *Product* by the *third Term*, (as has been taught in the 12th and 13th Chapters of this Work) the *Quotient* thence arising will be the *fourth Term* or *Answer*, in a *Reciprocal* or *inverse Proportion*.

Then

Rule of Three Inverse. Part I.

Then the *first Example* above, when stated, will stand thus :

M. D. M. D.
If 12 : 18 :: 6 : 36

Now by the *Sliding Rule*, the *Product* of the *first* and *second* Terms is 216, which *divided* by the *third* Term 6, as directed in the 13 Chap. the *Quotient* is 36, the *fourth proportional* Term in an *Inverse Proportion*. And after this Manner may you work Questions in *plural Proportion*, *Fellowship*, &c. by *multiplying* and *dividing* as the Question requireth ; which has been shewn above.

2. Of DUPLICATE Proportion.

Of duplicate Proportion.

Definition. This Rule chiefly concerns the *Proportion of Superficies to Superficies*, in which are *three* Numbers given to find a *Fourth* in a *Duplicate Proportion*.

An Example.

Example I. Let the *Diameter* of a *Circle* be 12 Inches, its *Area* is 113.1, what will be the *Area* of another *Circle*, whose *Diameter* is 24 Inches ?

Operation.

B. A. B. A. B. A. B. A.
As 12 : 113.1 :: 24 : 226.2 Then as 12 : 24 :: 226.2 : 452.4

Note, if you put 24 in the *second Term's Place*, then the *Answer* will be had without stirring the *Slider B*.

Now take the *Reverse* of the former Question.

The *Areas* of *two Circles* with the *Diameter* of one of them, being given to find the *Diameter* of the other *Circle*.

A second Example.

Example II. Let *two Circles* be given, the *Area* of one is 452.4, and its *Diameter* 24 Inches, the *Area* of the other *Circle* is 113.1 Inches ; I demand the *Diameter* of that *Circle* ?

Operation.

C. D. C. D.
As 452.4 : 24 :: 113.1 : 12, the *Diameter* sought. But if you take the *less Circle*, the two first Terms, *i. e.* *Area* and *Diameter* in the *Supposition*, to find the *Diameter* of the *greater Circle*, then the *fourth proportional* Term is the *Diameter* sought.

C. D. C. D.
As 113.1 : 12 :: 452.4 : 24, the *Diameter* sought.

3. Of TRIPPLICATE Proportion.

Of Triplicate Proportion.

Definition. This Rule concerneth the *Proportion* between *Solids* and *Solids*, in which are *three* Numbers given, to find a *fourth* in a *Triplicate Proportion*.

An Example.

Example I. Suppose an *Iron Bullet*, whose *Diameter* is 4 Inches, weigh 9.26 Pounds, what will another *Bullet* weigh whose *Diameter* is 8 Inches ?

Operation.

Operation.

B. A. B. A.
 As 4 is to 8 } so is { 9.26 } to { 18.52 } The Answer in More Examples
 } { 18.52 } { 37.04 } Pounds. for Practice.
 } { 37.04 } { 74.08 }

And this without moving the Rule when once set.

Note, The Solidity of a Bullet* whose Diameter is 4 Inches, A Note.
 is 33.5 Inches, and that multiplied by 4.422979, and divided by
 16 (the Ounces in a Pound Avoirdupois) Quotes 9.26 Pounds.
 Also the Weight of a Bullet whose Diameter is 8 Inches will by
 the same Rule be found to be 74.14 Pounds.

Example II. If a Gun of 5 Inches Diameter require for its A second Exam-
 due Charge 16 Pounds of Powder; how much Powder will a ple.
 Gun of 4 Inches Diameter require for its due Charge of the same
 Powder?

Operation.

As 5 is to 4 } so is { 16 } to { 12.8 } The Answer in More Examples.
 } { 12.8 } { 10.24 } Pounds.
 } { 10.24 } { 8.192 }

without moving the Rule when once set.

C H A P. XVI.

To find a Geometrical mean Proportional† between
 any Two given Numbers.

TO find a Geometrical Mean is of great Use in all Sorts of Of a Geometri-
 Mensuration, which are to be wrought by the Sliding cal mean Pro-
 Rule; this will be more evident by the following portion.

R U L E.

Set one of the given Numbers on D, to the same Number This is always
 upon C, and against the other Number upon C, is the Geo- wrought upon
 metrical Mean upon D. the Lines C and D.

Example I. I demand the Geometrical Mean between 4 and 6? See Page 24.

Operation.

Set 4 upon D, to 4 upon C, and against 6 upon C, is 4.89 An Example.
 upon the Line D, the Answer required.

Example II. What's the Geometrical Mean between 20 and 30?

Operation.

* See the Table of Specific Gravity hereafter. C H A P. XXXII.

† A mean or middle Proportional between any two Numbers, is that which hath the same
 Proportion to the third Term that the first bears to it. Thus 8 is a mean Proportional be-
 tween 2 and 32, because as 8 is to 32, so is 2 to 8.

Operation.

Set 30 on D, to 30 on C, and *against* 20 on C, is 24.49 on D, the *Answer*.

A Note.

Note, It matters not *which* of the two Numbers you take first ; for if I had set 20 to 20, in *this* Example, or 6 to 6 in the first Example, the *Answers* would have been the same, as by Trial you may find. Here follow some more *Examples* for *Practice*.

Several Exam-
ples for Prac-
tice. ¶

What's the Geo-
metrical Mean
between

16.	27.4	20.93
24.5	12.	17.1
12.8	40.5	22.8
29.2	50.1	38.2
40.1	18.6	27.3
81.	25.	45.
21.4	36.5	28.6
32.	62.	44.6
46.6	100.75	68.5
3.4	12.5	5.9

C H A P. XVII.

To extract the Square Root upon the Sliding Rule.

To Extract the
Square Root.

TO perform this we must set the Lines C and D even ; that is, set one on C to one on the Line D, and as the Rule thus stands, it becomes a Table for extracting the Square Root of any Number whatsoever.

So that if you look for any Square Number on C, right against it on the Line D is the Root thereof.

Example. If you will have the Square Root of 9, you will find it to be 3.

More Examples for Practice.

Several Exam-
ples for Prac-
tice.

If the Square Number is	16 25 144 2401 3249 6561	The Square Root will be	4 5 12 49 57 81
----------------------------	---	----------------------------	--------------------------------

To extract the Square Root by the Lines A and B on the Sliding Rule.

* Move the Slider, till you make the same Number upon the Rule answer 1 on the Slider, as 1 on the Slider answers the Square

* See J. VERO's *Excise and Math-Examiners Assistant*, useful also for Supervisors and Officers.

Square Number on the Rule, which Number will be the Square Root sought.

Thus,							
A.		B.			B.		A.
9	:	1	:	:	9	:	81
8	:	1	:	:	8	:	64
7	:	1	:	:	7	:	49
6	:	1	:	:	6	:	36
5	:	1	:	:	5	:	25
4	:	1	:	:	4	:	16
3	:	1	:	:	3	:	9
2	:	1	:	:	2	:	4
					Root.		Square.

C H A P. XVIII.

The Extraction of the Cube Root by the Sliding Rule.

TO perform this we have nothing more to do than to set To Extract the the Lines D and E, *even*; and then *against* any *Cube* *Cube Root.* Number upon E, is the Root upon D: And *as the Rule now stands*, it is a *Table of Cubes*, and their Roots of any Numbers *whatsoever* *.

Example. Let 1728 be a given *Cube Number*, whose Root An Example, is required.

Operation.

First. Seek for 1728 upon the Line C; which found, make a Dot upon the Rule with the Pen; then *move* the Slider, (*either way*) until the Number 1728, on C, cut the *same Number* on D, that 1 upon D doth upon C, which are 12 on both Lines; so I conclude that 12 is the *Cube Root* of 1728, as was required.

If the given Cube Number is	117649	the Cube Root will be	49	Several Examples for Practice.
	74088		42	
	729		9	
	512		8	
	343		7	
	216		6	
	125		5	
	64		4	
	27		3	
	8		2	
	1		1	

To

* But if you have a *Sliding Rule* (such as *Vero's*, &c.) that has not on it the *Cube Line*, this Defect may be supplied by the Lines C and D, thus: Find the given *Cube Number* upon the Line C, then move the *Slider C*, (*either way*) until that *Cube Number* stand against the *same Number* on the Line D, that 1, on the said Line D, doth on the *Slider C*; then will Unity, or 1 on D, cut the *Cube Root* upon the *Slider C*. This Hint I had from Mr. Charles Eades, late Master of the Mathematical School at *Petersfield*, in *Hampshire*.

The Proof.

To prove the Truth of the above Method of extracting the Cube Root upon the Lines C and D, I have examined it with great Attention, and find it to be very just (though a little troublesome) as I thus prove.

Set 1 or 10 (according as your Number is for Largeness) on D, to the Root upon C, and against the Cube Number on C, is another Root upon D, that is a Number equal to, or the very same with the Cube Root.

Example. Set 10 upon D, to 9 (the Cube Root of 729) upon C, and against 729 upon C, is 9 upon D.

Again, Set 10 upon D, to 8 upon C, and against 512 upon C, is 8 upon D, a Number equal to the Root.

Also, Set 10 upon D, to 7 upon C, and against 343 upon C is 7 upon D; and thus you may examine and prove the Extraction of the Cube Root of any Number whatsoever.

Plate 1. Fig. 13. The Gauging Rod or Cane, is no more than a straight slender Cane or Holly-stick, 36 Inches (more or less) long, decimally divided; its Use is to take Ale and Malt Gauges, and for gauging of spheroidal Casks by help of the two diagonal Lines for Ale and Wine, which are explained in Page 34.

C H A P. XIX.

Of Divisors, Multipliers, and Gauge Points, used in Gauging, and all Sorts of Mensuration whatsoever.

THE true Ratio* of the Diameter of a Circle to its Circumference has not yet been determined; it was first found near the Truth by Archimedes, and his Proportion is as *Archimedes and Metius's Proportions.* 7 to 22, or according to Metius as 113 to 355; that is, if the Diameter of a Circle be 7 (of any thing whatsoever) then the Circumference would be 22; but this Proportion is troublesome, because it requires both Multiplication and Division; which might possibly invite the famous Van Ceulen † to search more narrowly into the Affair, who after many tedious Trials found the Circumference of a Circle to be 3, with thirty-five Decimal Places; that is, if the Diameter

* When two Quantities or Numbers are compared with one another, in respect of their Greatness or Smallness, that Comparison is called Ratio, and signifies the Ratio, Reason, or Proportion that one hath to the other.

† Ludolphus Van Ceulen was born Anno 1540, died in 1610, and lies buried in the great Church at Leyden, on whose Tombstone are engraven the Numbers here specified, with the Date of his Birth and Death, as it was taken off and brought to me by one of my Pupils, who visited that University in October 1725. And besides those I have mentioned above, Grimmerger, Snellius, and others, have written upon this Subject.

Ch. XIX. Of Gauge Points, &c.

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meter of a Circle be Unity or 1, then the Circumference will be 3.14159265358979323846264338327950288: But that great Master of Numbers, Mr. Abraham Sharp, has doubled that Number of Places; and Mr. John Machin, some Time Professor of Astronomy in Gresham College, and Secretary to the Royal Society, carried it to 100 Places. But after all, these Numbers are no more than Approximations*: However in Practice you never need to take any more than 3.14159. For that will be sufficiently exact in any thing of Business that may occur.

Hodgson's System of the Mathematicks, Vol. I. Page 82. Sharp and Machin's Proportions.

1. Now according to the Demonstration of Archimedes †, The Rule. if we multiply half the Circumference of a Circle, by half the Diameter, the Product will be the Area or superficial Content of that Circle.

Example. Let the Diameter be 1, the Circumference will be 3.141592

Half the Circumference	1.570796
Half the Diameter	.5

Of a Circumference and Diameter.

The Area, or superficial Content .7853980

2. If Unity be divided by its Area ‡, the Quotient will be 1.2732406; by which if you multiply the Divisor for a Square, Gauge Points, it will give you the Divisor for a Circle, the Square Root of which will be the Gauge Point on the Sliding Rule.

How to find Gauge Points, &c.

Note, This Number 1.2732406 is the Square of the Diameter of a Circle, whose Area is Unity. For if the Area of any Circle be multiplied by 1.2732406, the Product will be the Square of the Diameter, whose Square Root is the Diameter of that Circle.

A Note.

You are to observe, that 12 Inches long, by 12 Inches broad, make 144, the Inches in a Square Foot; and that 282 solid Inches are an Ale Gallon, and 231 a Wine Gallon, and 2150.42 cubic Inches are a Winchester Bushel; and 1728 are the solid Inches in a Foot of Timber or Stone, it being the Cube of 12.

How this is found is shewn in Malt-gauging.

Area of Unity	Unity	Quotient
---------------	-------	----------

Example I. .7853975)1 00000000000000(1.2732406

Now multiply 1.2732406 by the Divisor for a Square, which will give the Divisor for a Circle in the same Measure.

To find the Gauge-point for Ale.

The

* Approximation, in Arithmetic, is a continued Approach towards the true Root or Quantity sought, without a possibility of ever arriving at it exactly.—For it is evident, that if a Number proposed be not a true Square, it is in vain to hope for a just Quadratic Root thereof, explicable by Numbers, Integers or Fractions; whence, in such Cases, we must content ourselves with Approximations, somewhat near the Truth, without pretending to Accuracy; and so for the Cubic Root, of what is not a perfect Cube; and the like for Superior Powers.

† A Circle is composed of an infinite Number of Triangles, whose Bases are equal Parts of the Periphery, and their Perpendiculars the Radii of the Circle. Or, according to Archimedes, a Circle is equal to a Triangle, which hath for its Base the Circumference, and for its Height the Semi-diameter of that Circle. Whiston's Euclid, Page 192.

‡ Area of any Figure in Geometry, is the plane Surface thereof.

The Multiplier or Multiplicator for reducing a Square to a Circle is 1.2732406

The Divisor, for a Square, Ale Gallon 282

25464812

101859248

25464812

The * Divisor for a Circular

Ale Gallon

$359.0538492(18.94$ Gauge Point for Ale.

Example II. Of Wine.

To find the Gauge Point for Circle is The Multiplier for reducing the square Wine Gallon to a

Wine Gallons. The Divisor for a square Wine Gallon 231

12732406

38107218

25464812

The Divisor for a Circle $294.1185786(17.14$ Gauge Point for Wine.

Example III. Of Malt.

To find the Gauge Point for Circle is The Multiplier for reducing the square Malt Bushel to a

Malt Bushels. The Divisor for a square

Malt Bushel

1.2732406

2150.418

101859248

12732406

50929624

63662030

12732406

25464812

The Divisor for a Circular Malt Bushel $2737.9995045708(52.32$ Gauge Point for Malt.

Example IV. Of square Feet.

To find the Gauge Point for to a circular is The Multiplier or Multiplicator for reducing a square Foot

square Feet. The Divisor for a square Foot

1.2732406

144

50929624

50929624

12732406

The Divisor for a Circle, Feet Measure $183.3466464(13.54$ Gauge Point.

Example.

* The Square Root of this Divisor 359.0538492 , is the Gauge Point for Ale Gallons.

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Example V. Of Solid Feet.

To find the Gauge Point for a solid Feet.

The Multiplier for reducing the square solid Foot to a solid Feet.

Circle is 1.2732406

The Divisor for a solid Foot 1728

101859248
25464812
89126842
12732406

Square Root, or

The Divisor for a Circle 2200.15975680 (46.9 Gauge Point for a solid Feet.

Note, If these Divisors for a Square be divided by the Area of a Circle whose Diameter is, viz. .7853975, the Quotient will be equal to the respective Divisors for Circles.

And because 34.809 are found to be the solid Inches in a Pound of green Starch, (perfectly made) and consequently is a Divisor for a Square, the Divisor for a Circle and its Gauge Point are found thus:

Common Multiplier 1.2732406
Divisor for a Square 34.809

114591654
101859248
50929624
38197218

Square Root, or Gauge Point.

For a Circle 44.3202320554 (6.66

It often happens in Business, that when one of the Numbers, (given in the Question) is set to the Gauge Point, that the other given Number will fall off the Rule, which is remedied by finding a new Gauge Point, thus; set Unity on C, to the Gauge Point on D, and against the other 1, upon C, is the new Gauge Point upon D.

Example. Let it be required to find a new Gauge Point to 6.66.

Set 1 on C to 6.66 upon D, and against 1 on C, is 2, 1, the second Gauge Point upon D.

These second Gauge Points are the square Roots of the Divisors proper to any Square or Circle multiplied by 10; that is, in a mixt Number, only removing the Dot one Place nearer to the Right-Hand. Thus 144 is a Divisor for a Foot Square: Put a Cypher to it; thus 1440, and its square Root is 37.94 the second Gauge Point for a Square. And 183.34 being the Divisor for a Circle, remove the Dot one Place to the Right-Hand, and it will be 1833.4; its square Root is 42.8, the second Gauge Point.

PART I.

E

cond

Of Gauge Points, &c. Part. I.

cond Gauge Point for a Circle in Feet. The same Method is to be observed in all the other Second Gauge Points.

Of Multiplication and Division.

In Page 18 it was observed, that any Thing may be done by Multiplication, as well as by Division; therefore divide Unity by your Divisor, and the Quotient will be a common Multiplier: Thus, for square Factors.

144)1.0000000(.006944 Feet.

282)1.0000000(.0035461 Ale Gallon.

231)1.0000000(.0043289 Wine Gallon.

2150.418)1.000000000(.000465 Malt Bushels.

30.28)1.00000000(.033025 Tallow Pounds.

The following Table how made.

So according to the above Method, I have calculated the following Table of Factors, Divisors, and Gauge Points.

A TABLE

A TABLE of Factors; i. e. Multipliers, Divisors, and Gauge Points, both for Squares and Circles, and their new Gauge Points.

	Factors for Squares.	Factors for Circles.	Divisors for Squares.	Divisors for Circles.	Gauge 1 Point Squares.	Gauge 1 Point Circles.	Gauge 2 Point Squares.	Gauge 2 Point Circles.
Side of the Square and Diameter of the Circle each	1	.785398	1	1.27324	1	1.128		
A superficial Foot	.0069444	.005454	144	183.34	12	13.54	37.94	42.8
A solid Foot	.0005787	.0004545	1728	2200.158	41.569	46.9	13.141	2.166
Ale Gallon	.0035461	.0027851	282	359.05	16.79	18.94	53.1	59.92
Wine Gallon	.0043289	.0033999	231	294.118	15.19	17.14	48.06	54.22
Ale Barrel, 32 Gallons	.0001108	.000087	9024	11498.71	94.99	107.19	300.39	338.96
Beer Barrel, 36 Gallons	.0000985	.0000773	1152	12925.93	100.75	113.63	318.62	359.52
Ale and Beer Barrel, 34 Gallons	.0001046	.0000821	9588	12207.7	97.9	110.48	309.64	349.39
Winchester Bushel	.0004651	.0003653	2150.4	2738.	46.37	52.32	14.56	16.54
Winch. Bushel Allowance 4 in 20	.000372	.000292	2688.0	3421.8	51.84	58.49	16.39	18.49
Winchester Bushel Allow. 8 in 20	.0002791	.0002192	3584.0	4562.4	59.86	67.57	18.93	21.35
Winchester Bushel Allow. 10 in 20	.0002995	.0001826	4300.8	5476.	65.58	73.99	20.73	23.4
Winch. Bushel—8 in 20 to 4 in 20	.0003485	.000274	2866.	3650.	53.53	60.4	16.92	19.1
Winch. Bush.—10 in 20 to 4 in 20	.0002905	.0002183	3439.2	4380.	58.64	61.18	18.54	20.92
Tallow Pounds Gross	.033025	.02594	30.28	38.55	5.502	6.209	1.74	1.96
Tallow Pounds Net	.031844	.0251012	31.4	39.98	5.603	6.32	1.77	1.999
A Pound of Hard Soap	.035714	.028050	28.0	35.65	5.29	5.97	1.67	1.879
A Pound of Green Soft Soap	.038956	.0305997	25.67	32.68	5.06	5.716	1.6	1.8
A Pound of White Soft Soap	.0391235	.0307314	25.56	32.54	5.05	5.704	1.59	1.8
A Pound of Green or Raw Starch	.024561	.019291	34.8	44.32	5.9	6.66	1.4	2.1

A Note.

N. B. The first Gauge Points in this Table are the Side of a Square whose Area is equal to the respective Divisors.

Multipliers for Circles, how found.

After the same Manner the Factors or Multipliers for Circles are found by dividing Unity by the circular Divisors, thus:

183.34) 1.000000000 (.0054541 Foot.

359.05) 1.000000000 (.0027851 Ale Gallon.

294.12) 1.000000000 (.0033999 Wine Gallon.

27.38) 1.000000000 (.00365230 Malt Bushel.

38.55) 1.000000000 (.025940 Tallow Pounds.

Or,

How found another Way.

The same Factors for Circles may be found by dividing the Area of a Circle whose Diameter is 1, by the Divisors for Squares, and the Quotient will be the Multiplier for Circles. The above Factors may also be found thus:

144).785398 (.005454 Foot.

282).785398 (.002785 Ale Gallon.

231).785398 (.003399 Wine Gallon.

2150.418).785398 (.003652 Malt Bushel.

30.28).785398 (.0259 Tallow Pounds.

Of the Diameter and Area of a Circle.

Having the above Divisors and Multipliers, if the Diameter of a Circle be squared, and divided by the proper Divisor, the Quotients will be the Area of that Circle.

Or,

Another Way.

If it be multiplied by its proper Factor, the Product will be the Area of that Circle likewise.

An Example.

Example. Let the Diameter of a Circle be 24 Inches, I demand the Area in square Feet, and also in Ale Gallons?

See

Ch. XIX. Of Gauge Points, &c.

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See the Work.

The Area in Feet by Multiplication.

By Multiplication.

The Square of 24 = 576

Multiplier for a Circle .005454

2304

2880

2304

2880

Answer 3.141504 Feet, the same as by Division.

The Operation for Feet.

By Division.

The same by Division.

183.34)576.0000(3.14

550.02

25980

18334

76460

73336

3124

The Operation for Ale Gallons.

By Multiplication.

The Area in Ale Gallons by Multiplication.

Multiplier for a Circle .0027851

Square of a Diameter 576

167106

194957

139255

Answer 1.6042176 Ale Gals. the same as by Division.

The Operation for Ale.

By Division.

The same by Division.

359.05)576.0000(1.60

35905

216950

215430

1520

Note, These Multipliers are the respective Areas of a Circle whose Diameter is 1 Inch. Those Multipliers, what.

E 3

By

The same Example for Feet by the Sliding Rule.

Of Gauge Points, &c.

Part I.

By the *Sliding Rule* on the Line A and B.

For Feet.

As 183.34 is to 24 so is 24 to 3.14
 Divisor Diameter Diameter Feet, the Area.

Or,

By the *Gauge Point* on the Lines C and D.

As 13.5 is to 1 so is 24 to 3.14
 Gauge Point Unity Diameter Area in Feet.

The same Example for Ale Gallons by the Sliding Rule.

For the Area in Ale Gallons.

As 359.05 is to 24 so is 24 to 1.6
 Divisor Diameter Diameter Area.

Or,

By the *Gauge Points* on the Lines C and D.

As 18.94 is to 1 so is 24 to 1.6
 Gauge Point Unity Diameter Area.

A Note

Note, If the Square of the Diameter of any Circle be Multiplied by { .785398 { the Product } is the Area in the same Parts that your Dimensions are of.
 Divided } by { 1.273241 { the Quotient }

In Plate I. Fig. 1. you have a View of all these Figures together.

And for the Benefit of the young Student, I shall here insert,
 1. The Dimensions of a Circle. 2. The Side of the Square equal. 3. The Side of the Equilateral Triangle inscribed. 4. The Side of the Square inscribed. 5. The Area, putting for the Diameter Unity or 1.

Diameter of a Circle,

If the Diameter of a Circle be 1.

Then the { Circumference — — — } is { 3.141592
 Side of the Square equal — — — } .886227
 Side of the Equilateral Triangle — — — } .866024
 Side of the Square inscribed — — — } .707106
 Area — — — — — } .785398

Circumference of a Circle.

2. If the Circumference of a Circle be 1.

Then the { Diameter — — — — — } is { .3183101
 Side of the Square equal — — — } .282294
 Side of the Equilateral Triangle — — — } .2756646
 Side of the Square inscribed — — — } .225079
 Area — — — — — } .079577525

Note, by the 2d and 12th Books of Euclid's Elements. it is demonstrated, that Circles are in Proportion one to another as the Squares of their Diameters.

3. If

3. If the Side of the Square equal be 1.

Side of a Square equal.

Then the	{	Circumference	—	}	is	3.544907
		Diameter	—			1.128379
		Side of the Equilateral Triangle	—			.977205
		Side Square inscribed	—			.7978844
		Area	—			1.

4. If the Side of the Equilateral Triangle be 1.

Side of the Triangle.

Then the	{	Circumference	—	}	is	3.627593973
		Diameter	—			1.1547
		Side of Square equal	—			1.02326015
		Side of Square inscribed	—			.81649
		Area	—			1.048102588

5. If the Square inscribed be 1.

Square inscribed.

Then the	{	Circumference	—	}	is	4.44287741
		Diameter	—			1.414213
		Side of the Square equal	—			1.253313
		Side of the Equilateral Triangle	—			1.224744
		Area	—			1.570793

6. If the Area of a Circle be 1.

Area of a Circle.

Then the	{	Circumference	—	}	is	3.544907
		Diameter	—			1.128379
		Side of the Square equal	—			1.
		Side of the Equilateral Triangle	—			.9772048
		Side Square inscribed	—			.7978844

Here follows the Use of these Six Proportions last mentioned.

1. The Diameter of a Circle being given, to find the Circumference.

For Diameter and Circumference.

The Rule.

The Rule.

If the Diameter of any Circle be

Multiplied } by { 3.14159 } the Product } is the Circumference.
Divided } { .31831 } the Quotient }

Example. Let the Diameter of a Circle be 24 Inches, what is the Circumference in Inches?

An Example.

By the Sliding Rule.

A B A B
As 1 is to 3.14159 so is 24 to 75.4
Unity Multiplier Diameter Circumference.

For the Diameter and Side of the Square equal

The Rule.

2. The Diameter of a Circle being given, to find the Side of the Square equal.

The RULE.

If the Diameter of any Circle be
Multiplied by $.886227$ { the Product } is the Side of the
Divided by 1.128379 { the Quotient } Square equal.

An Example.

Example. Admit the Diameter of a Circle be 24 Inches, what's the Side of the Square equal?

Operation by the Sliding Rule.

A B A B
As 1 is to .886 so is 24 to 21.3

Unity Multiplier Diameter Side Square equal.

For the Diameter and Side of a Triangle.

The Rule.

3. The Diameter of a Circle being given, to find the Side of an Equilateral Triangle inscribed.

The RULE.

If the Diameter of any Circle be
Multiplied by $.866024$ { the Product } is the Side of the
Divided by $.1547$ { the Quotient } Equilateral Triangle inscribed.

An Example.

Example. Admit the Diameter of a Circle be 24 Inches, what's the Side of the Equilateral Triangle?

Operation by the Sliding Rule.

A B A B
As 1 is to .866 so is 24 to 20.8

Unity Multiplier Diameter Side Equilateral Triangle.

For the Diameter and Side of a Square inscribed.

The Rule.

4. The Diameter of a Circle being given, to find the Side of the Square inscribed.

The RULE.

If the Diameter of any Circle be
Multiplied by $.707106$ { the Product } is the Side of the
Divided by 1.414213 { the Quotient } Square inscribed.

An Example.

Example. Admit the Diameter of a Circle be 24 Inches, what's the Side of the Square inscribed?

Operation by the Sliding Rule.

A B A B A B A B
As 1 is to .707 so is 24 to 16.97 Or as 1 is to .707 so is 24 to 16.97

5. The

- * 5. The Diameter of a Circle being given, to find the Area of that Circle in the same Measure that your Diameter is. For the Diameter and Area.

The RULE.

If the Square of the Diameter of any Circle be
 Multiplied } by { .785398 } the Product } is the Area.
 Divided } { 1.273241 } the Quotient }

The Rule.

Example. Admit the Diameter of a Circle be 24 Inches, An Example.
 what's the Area?

Operation by the Sliding Rule per the Factor, or Multiplier. By Multiplication.

A B A B
 As 1 is to 24 so is 24 to 576 Then
 As 1 is to 576 so is .785 to 452.4 Inches, the Answer †,

Or on the Sliding Rule by Division.

By Division.

A B A B
 As 1.273 is to 1 so is 576 to 452.4 as before
 Divisor Unity Sqr. Diam. Area.

6. The Circumference of a Circle being given, to find the Diameter. The Circumference and Diameter.

The RULE.

If the Circumference of any Circle be
 Multiplied } by { .31831 } the Product } is the Diameter.
 Divided } { 3.14159 } the Quotient }

The Rule.

Example. Admit the Circumference of a Circle be 75.4, An Example.
 what's the Diameter?

Operation by the Sliding Rule by Multiplication.

By Multiplication.

A B A B
 As 1 is to .318 so is 75.4 to 24
 Unity Multiplier Circumference Diameter.

On

* Of this I have hinted in Page 52 ; but it is here more largely explained.

† N. B. The Area of the Circle above is 452.4 Square Inches, which

Divided by $\left\{ \begin{array}{l} 144. \\ 282. \\ 231. \\ 2150.4 \\ 30.38. \end{array} \right\}$ will give the $\left\{ \begin{array}{l} \text{Feet superficial.} \\ \text{Ale-Gallons.} \\ \text{Wine Gallons.} \\ \text{Malt Bushels.} \\ \text{Pounds of Tallow gross.} \end{array} \right\}$ Area of the Circle in

Or,

N. B. You will have the same Areas as before, if the Square of the Diameter 576 be

Divided by $\left\{ \begin{array}{l} 183.34 \\ 359.05 \\ 294.118 \\ 2738. \\ 38.55 \end{array} \right\}$ the Divisors for Circles taken from Page 47, will give the Areas in $\left\{ \begin{array}{l} \text{Feet superficial.} \\ \text{Ale-Gallons.} \\ \text{Wine-Gallons.} \\ \text{Malt-Bushels.} \\ \text{Pounds of Tallow gross.} \end{array} \right\}$

By Division.

On the Sliding Rule by Division.

	A	B	A	B
As 1	is to	3.14	so is	75.4 to 24
Unity		Divisor		Circumference Diameter.

In the Circumference and Side Square equal.

7. The Circumference of a Circle being given, to find the Side of the Square equal to that Circle.

The Rule.

The RULE.

If the Circumference of any Circle be

Multiplied	}	by	{	.282094	}	the Product	}	is the Side of the
Divided				3.544907		the Quotient		Square equal.

An Example.

Example. Admit the Circumference of a Circle be 75.4, what's the Side of the Square equal?

By Multiplication.

Operation by the Sliding Rule by Multiplication.

	A	B	A	B
As 1	is to	.282	so is	75.4 to 21.27
Unity		Factor		Circumf. Side Squ. equal, the Answer.

Or,

By Division.

On the Sliding Rule by Division.

	A	B	B	A
As 1	is to	3.54	so is	75.4 to 21.27
Unity		Divisor		Circumf. Side Square equal.

In the Circumference and Side of a Triangle inscribed.

8. The Circumference of a Circle being given, to find the Side of the Equilateral Triangle inscribed in that Circle.

The Rule.

The RULE.

If the Circumference of any Circle be

Multiplied	}	by	{	.2756646	}	the Product	}	is the Side of the
Divided				3.6275939		the Quotient		Equilateral Triangle inscribed.

An Example.

Example. Admit the Circumference of a Circle be 75.4, what's the Side of the Equilateral Triangle inscribed?

By Multiplication.

Operation by the Sliding Rule, per Factor, or Multiplier.

	A	B	A	B
As 1	is to	.2756	so is	75.4 to 20.78
Unity		Factor		Circumf. Side Triangle.

Or,

By Division.

On the Sliding Rule by Division.

	A	B	B	A
As 1	is to	3.627	so is	75.4 to 20.78
Unity		Divisor		Circumf. Side Triangle.

9. The

9. The Circumference of a Circle being given, to find the Side of the Square inscribed in that Circle.

For the Circumference and Side Square inscribed.

The RULE.

The Rule.

If the Circumference of any Circle be
Multiplied { by } .225079 { the Product } is the Side of the
Divided { by } 4.442877 { the Quotient } Square inscribed.

Example. Admit the Circumference of a Circle be 75.4, what's the Side of the Square inscribed?

An Example.

Operation on the Sliding Rule, per Factor, or Multiplier. By Multiplication.
A B A B
As 1 is to .225 so is 75.4 to 16.97
Unity Factor Circumf. Side of the Square.

Or,

By Division.

On the Sliding Rule by Division.
A B B A
As 1 is to 4.44 so is 75.4 to 16.97
Unity Divisor Circumf. Side of the Square.

10. The Circumference of a Circle being given, to find the Area of that Circle.

For the Circumference and Area

The RULE.

The Rule.

If the Square of the Circumference of any Circle be
Multiplied { by } .079577525 { the Product } is the Area.
Divided { by } 12.56636217 { the Quotient }

Example. Admit the Circumference of a Circle be 75.4 Inches, what's the Area in Feet?

An Example.

Now, before we can give a Solution to this Question, we must find the Circumference of those Circles whose Areas are equal in Quantity to the Inches, Feet, Gallons, Bushels, Pounds, &c. which will be Gauge Points upon the Sliding Rule.

The RULE.

A further Rule.

If the Area of any Circle be
Multiplied { by } 12.566368 { the Product } is the Square of the
Divided { by } .079578 { the Quotient } Circumference.
whose Square Root is the Circumference sought.

Of Gauge Points, &c.

Part I.

1. Example. For Feet.

The Common Multiplier 12.566368

The Square Inches in a Foot 144

50265472

50265472

12566368

Square Root, or Gauge

Square of the Circum. 1809.556992 (42.538 Point for Feet.

16

82)209

164

845)4555

4225

8503)33069

25509

85068)756092

680544

75548

After the above Manner I calculated the *Circumferences* or *Gauge Points* in the following Table, which will be of excellent Use to find the *Area* or *Solidity* of any of these under mentioned, especially in *Timber Measures*, when only the *Circumference* is given.

A Table of
Areas and
Gauge Points.

A Table of the *Circumferences* of Circles answering the *Areas* in the *second Column*, which are *Gauge Points* upon the *Sliding Rule*, on the *Line D*.

		Areas.	Circum. or G. Points.
	A Superficial Foot —	144.	42.538
See an	A Solid Foot —	1728.	147.36
Example	Ale. Gallon —	282.	59.529
of its Use	Wine Gallon —	231.	53.878
in Page	Mals Bushel —	2150.4	164.38
97.	Tallow Pound Gross —	30.28	19.5066
	Ditto Neat —	31.4	19.8641
	A Pound of hard Soap —	28.0	18.7875
	A Pound of green soft Soap —	25.67	17.9605
	A Pound of white soft Soap —	25.56	17.9219
	A Pd. of green or raw Starch —	34.8	20.91

Now

Ch. XIX. Of Gauge Points, &c.

61

Now for the *Area in Feet*, when the *Circumference* is 75.4 *An Example of*
Inches by the Sliding Rule. *Feet.*

D C D C
 As 42.54 is to 1 so is 75.4 to 3.14
 G. P. Unity. Circumf. Feet.

For Ale.

An Example of
 Ale.

D C D C
 As 59.53 is to 1 so is 75.4 to 1.6 Gallons.
 G. P. Unity. Circumf.

For Wine.

Of Wine.

D C D C
 As 53.88 is to 1 so is 75.4 to 1.95 Gallons.
 G. P. Unity. Circumf.

For Malt Bushels.

Of Malt.

D C D C
 As 164.38 is to 1 so is 75.4 to 21 Decim. Parts of a Bushel.
 G. P. Unity. Circumf.

For a Pound of Tallow Grofs.

Of Tallow.

D C D C
 As 19.51 is to 1 so is 75.4 to 1.48 Pound.
 G. P. Unity. Circumf.

Note, This *Divisor* 12.56636217 is not to be found in any *A Note*.
 of the six *Properties* of a *Circle* in *Pages* 54 and 55; but the
Factor is in the *Second* thereof, *Page* 54, therefore (as I have
 before taught) divide *Unity* by the said *Factor* 0.79577525,
 and the *Quotient* will be the *Divisor* 12.56636217.

Or,

It is grounded upon this universal *Theorem*, that when the
Diameter is 4, the *Circumference* and *Area* are equal, viz.
 12.566368.

By the *Ten Operations* on *Pages* 54, 55, 56, 57, 58, 59, I
 have shewn how to find any of the *Parts* in the *Circle* (*Plate* I.
Fig. 1.) when the *Diameter* and *Circumference* are given, and
 to go through all the *Parts* thereof will require *Twenty* *Opera-*
tions more, which I shall leave unperformed to try the
Learner's Ability; only he is to observe,

1. That when the *Diameter* of one *Circle* is 1, and the *Dia-* Some *Properties*
meter of another *Circle* is 2, the *Circumference* of the first is of a *Circle*.
 equal to the *Area* of the second, viz. 3.141592.

2. If the *Circumference* be 4,
 The *Diameter* and *Area* are equal } viz. 1.273241, found in *Page* 47.

3. If the *Diameter* of a *Circle* be 4,
 The *Circumference* and *Area* are equal } viz. 12.566368.

Hence,

Hence, because *Circles* are the most *capacious* of all other *Figures*, it will not be unacceptable to the diligent Reader to let him see that if he takes the *fourth Part* of a *Circle*, and *squares* it, that will not be equal to the *Area* of that *Circle*, although the four *Sides taken together* are equal to the *Circumference* of that *Circle*.

Plate IV. Fig. 1. So in the Circle above made use of, whose Circumference is 75.4 its Area is 452.4; the fourth Part of the Circumference is 18.85, which squared is only 355.3225, that is, 97.0775 less than the Truth, in the Circle whose Diameter is 24; so that the greater the Circle is, the greater will the Error be.

For further *Proof* of this Matter, if you take a *Pewter Pint Ale Measure*, whose *Content* is *35.25 Cubic Inches*, and beat it perfectly into a *Square Form*, as *ACBD*, you will then find it to contain only *28.903 Cubic Inches*, that is, *less than the Truth* by *6.34840542570781791*; the *Area* of the *Circle* is *8.7615859288*, the *Area* of the *Square* is *6.8813320653076624*.

Archimedes has shewn, that if the Diameter of one Circle be double to the Diameter of another, the Area of the first Circle will be four Times the second.

Why Keay is
wrong and Hop-
pus right.

This shews the Reason why taking the *fourth Part* of the *Girt* in *Timber Measuring* is false; so that it is evident, that *Mr. Hoppus* in the *Preface* to his *new Tables of Practical Measuring* (Price 2s. 6d.) has very justly exposed *Isaac Kay* and his Followers. See also *Hawney's Measurer*, Page 249. which approves *Mr. Hoppus's Method*, and condemns *Kay's*.

See Plate IV. Fig. 1. for the Demonstration.

of a Peck —	67.50	375	25.00	of a Peck —	10.00	100	10.00
of a Peck —	134.00	1340	10.00	of a Peck —	10.00	100	10.00
of a Peck —	208.00	2080	10.00	of a Peck —	10.00	100	10.00
of a Peck —	247.00	2470	10.00	of a Peck —	10.00	100	10.00
of a Peck —	275.00	2750	10.00	of a Peck —	10.00	100	10.00
of a Peck —	310.00	3100	10.00	of a Peck —	10.00	100	10.00
of a Peck —	347.00	3470	10.00	of a Peck —	10.00	100	10.00
of a Peck —	385.00	3850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	425.00	4250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	465.00	4650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	505.00	5050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	545.00	5450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	585.00	5850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	625.00	6250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	665.00	6650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	705.00	7050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	745.00	7450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	785.00	7850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	825.00	8250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	865.00	8650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	905.00	9050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	945.00	9450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	985.00	9850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1025.00	10250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1065.00	10650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1105.00	11050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1145.00	11450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1185.00	11850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1225.00	12250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1265.00	12650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1305.00	13050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1345.00	13450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1385.00	13850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1425.00	14250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1465.00	14650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1505.00	15050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1545.00	15450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1585.00	15850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1625.00	16250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1665.00	16650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1705.00	17050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1745.00	17450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1785.00	17850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1825.00	18250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1865.00	18650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1905.00	19050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1945.00	19450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	1985.00	19850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2025.00	20250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2065.00	20650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2105.00	21050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2145.00	21450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2185.00	21850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2225.00	22250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2265.00	22650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2305.00	23050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2345.00	23450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2385.00	23850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2425.00	24250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2465.00	24650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2505.00	25050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2545.00	25450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2585.00	25850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2625.00	26250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2665.00	26650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2705.00	27050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2745.00	27450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2785.00	27850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2825.00	28250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2865.00	28650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2905.00	29050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2945.00	29450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	2985.00	29850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3025.00	30250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3065.00	30650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3105.00	31050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3145.00	31450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3185.00	31850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3225.00	32250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3265.00	32650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3305.00	33050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3345.00	33450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3385.00	33850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3425.00	34250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3465.00	34650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3505.00	35050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3545.00	35450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3585.00	35850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3625.00	36250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3665.00	36650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3705.00	37050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3745.00	37450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3785.00	37850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3825.00	38250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3865.00	38650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3905.00	39050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3945.00	39450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	3985.00	39850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4025.00	40250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4065.00	40650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4105.00	41050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4145.00	41450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4185.00	41850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4225.00	42250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4265.00	42650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4305.00	43050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4345.00	43450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4385.00	43850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4425.00	44250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4465.00	44650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4505.00	45050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4545.00	45450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4585.00	45850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4625.00	46250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4665.00	46650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4705.00	47050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4745.00	47450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4785.00	47850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4825.00	48250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4865.00	48650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4905.00	49050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4945.00	49450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	4985.00	49850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5025.00	50250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5065.00	50650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5105.00	51050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5145.00	51450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5185.00	51850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5225.00	52250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5265.00	52650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5305.00	53050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5345.00	53450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5385.00	53850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5425.00	54250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5465.00	54650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5505.00	55050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5545.00	55450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5585.00	55850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5625.00	56250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5665.00	56650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5705.00	57050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5745.00	57450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5785.00	57850	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5825.00	58250	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5865.00	58650	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5905.00	59050	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5945.00	59450	10.00	of a Peck —	10.00	100	10.00
of a Peck —	5985.00	59850	10.00	of a Peck —	10.00	100	10.00

A TABLE of a Superficial Foot, of a Solid Foot, of the Ale and Wine Gallon, of the Malt-Bushel, together with the Divisors and Gauge Points both for Squares and Circles.

By C. LEADBETTER.

For a SQUARE.	Superficial Foot.		Solid Foot.	
	Divisors.	Gauge Point.	Divisors.	Gauge Point.
A Foot —	144	12	1728	41.57
One Half —	72	8.48	864	29.4
One Fourth —	36	6.	432	20.7
For a CIRCLE.	Superficial Foot.		Solid Foot.	
	Divisors.	Gauge Point.	Divisors.	Gauge Point.
A Foot —	183.34	13.54	2200.158	46.9
One Half —	91.67	9.57	1100.079	33.17
One Fourth —	43.885	6.39	550.0395	23.45
For a SQUARE.	Ale Divisors.		Wine Divisors.	
	Divisors.	Gauge Point.	Divisors.	Gauge Point.
A Gallon —	282	16.79	231	15.19
A Pottle —	141	11.87	115.5	10.72
A Quart —	70.5	8.39	57.75	7.59
A Pint —	35.25	5.92	28.875	5.37
Half a Pint —	17.625	4.10	14.4375	3.70
For a CIRCLE.	Ale Divisors.		Wine Divisors.	
	Divisors.	Gauge Point.	Divisors.	Gauge Point.
A Gallon —	359.05	18.95	294.1186	17.14
A Pottle —	179.53	13.39	147.0593	12.12
A Quart —	89.76	9.47	73.5296	8.57
A Pint —	44.88	6.69	36.7648	6.06
Half a Pint —	22.44	4.73	18.3824	4.28
Corn and Malt Measure.	Divisors for a Square.		Divisors for a Circle.	
	Divisors.	Gauge Point.	Divisors.	Gauge Point.
A Bushel —	2150.4184	46.37	2737.99	52.32
Half a Bushel —	1075.2092	32.79	1368.995	36.99
A Peck —	547.6046	23.18	684.49	26.10
Half a Peck } or 1 Gallon }	268.8023	16.39	342.245	18.49
of a Peck —	134.40115	11.59	171.1225	13.08
of a Peck —	67.203575	8.19	85.56	9.25

A TABLE of Gauge Points and Divisors.

Plate I. Fig. 17. If the *Proportion* which the *Diameter* of a *Circle* hath to its *Circumference*, be allowed to be as 7 to 22, then the *Square* made of the *Diameter* of any *Circle*, is in *Proportion* to the *Area* of that *Circle*, as 14 to 11; and therefore every *Circle* inscribed within a square is $\frac{11}{14}$ thereof.

Demonstration.

See Plate I. Let the *Circle* inscribed within the *Square* be A, B, C, D, I say the *Area* of that *Circle* is equal to $\frac{11}{14}$ of that *Square*.

Fig. 17.

Suppose the *Diameter* E F be 14, equal to the *Side* of the *Square* A B, &c. and the *Circumference* 44, compare their *Areas*?

Operation.

First, as 7 is to 22 so is 14 to 44 the *Circumf.* Side A B = 14

Half—	22	Multi.	14
Half the Diameter	7		56
Area of the Circle	154		14

Area of the Square 196

Secondly, Say, as 154 is to 196, so is 11 to 14; consequently the *Proportion* that a *Circle* hath to a *Square*, whose *Side* is equal to the *Diameter* of the *Circle*, is as 11 to 14.

CHAP. XX.

Shewing how to gauge all Manner of SUPERFICIES *.

See Plate I.

Of the Square.

Plate I. Fig. 1.

AND first of a SQUARE.

1. *Definition.* A *Geometric Square* is a Figure consisting of four equal Sides, and as many right Angles †.

The RULE.

The Rule.

Take the *Side* of the *Square* in *Inches* and *Decimal Parts* by help of your *Four-foot Rule*, and multiply it by itself; divide the

* As *Unity*, or 1, is the *Beginning* of *Numbers*, so a *Point* is the *Beginning* of *Magnitude*, and if a *Point* be put in *Motion*, or supposed to move, it will generate, or form a *Line*; and if a *Line* be put in *Motion*, or supposed to move (parallel to itself) it will form a *Surface* or *Superficies*.

† An *ANGLE* is made by the *Meeting* of two *Lines*; and if one *Line* cut the other by a *Perpendicular*, that is to say, *Square-wise*, then it is called a *Right Angle*; but if it lean either way, it makes two *Angles*, one *acute* or sharp, and the other *obtuse* or blunt. And in the *Business* of *Gauging*, all *Superficies* or *Areas* are always understood to be one *Inch deep*, otherwise it could not be said (as in the *Gauger's Language* it is) that the *Area* of such a *Circle*, or of such a *Back*, &c. is so many *Gallons*.

Plate. 1. An *Areometer*
page 203.

Fig. A.

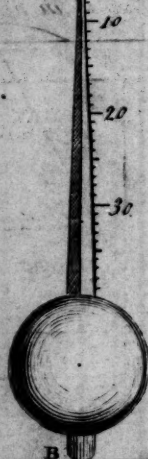


Fig. 1.
A Square equal to a Square inscrib'd, and an equal
Legg'd Triangle, in a Circle page 64.

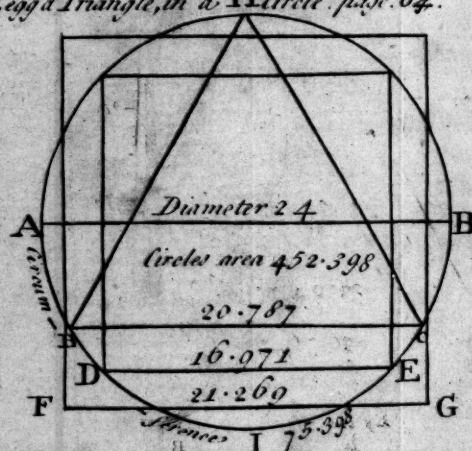
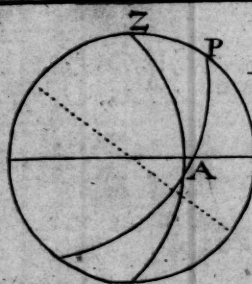


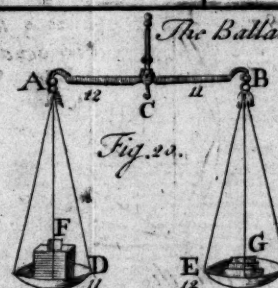
Fig. 2.
An Oblong or Long Square. page



Fig. 16.
page 91.



A Spherical
Triangle



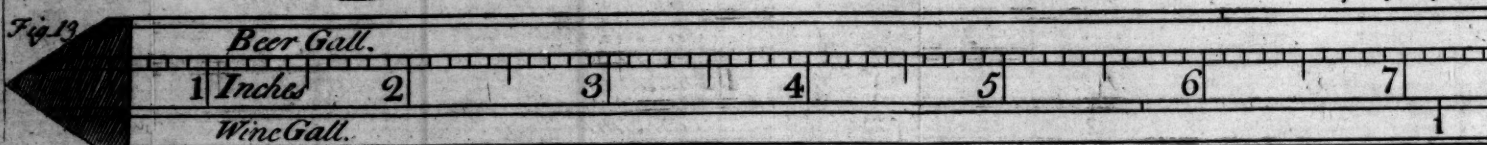
The Balance or Scales page 207.

Fig. 20.



A Gauging Tool

Fig. 13.



re. page. 65.



Fig. 3.
A Rhombus. page. 66.

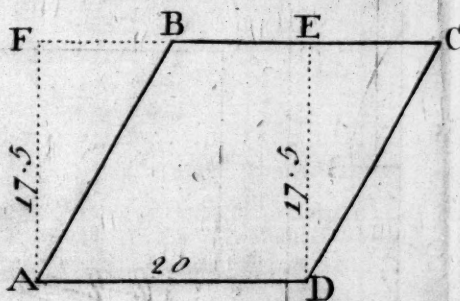


Fig. 4.
A Rhomboides. page 67

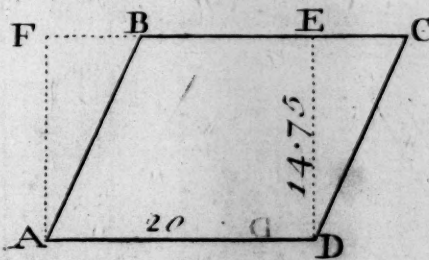
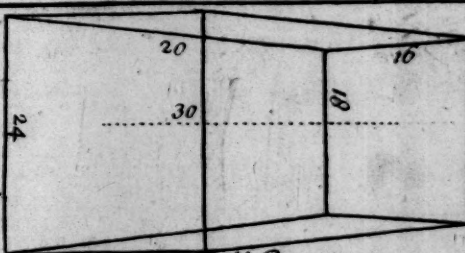
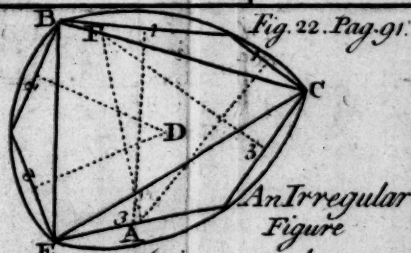
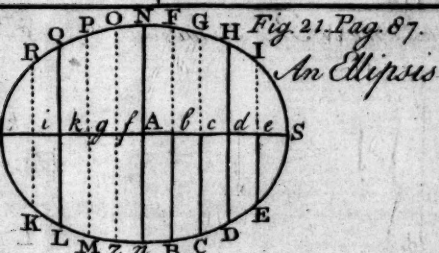
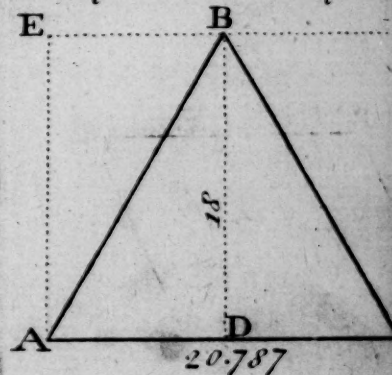


Fig. 5.
A Triangle or three sided Figure.



An Irregular
Prismoid
Fig. 23. Pag. 96.

Fig.
Part

ing Rod, or lane of three feet, with the Diagonal Lines for Beer and Wine Gallons. See it explained on page. 35. 36



Fig. 5.
A Triangle or three sided Figure. page 68

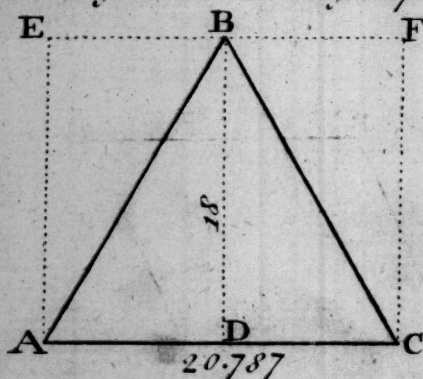


Fig. 6.
A Trapezium. page 69

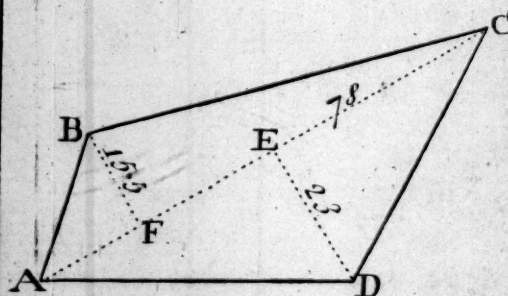
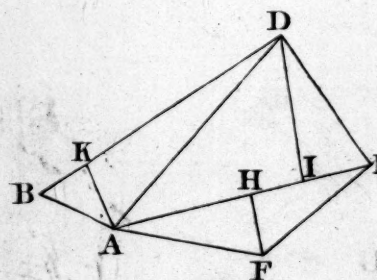


Fig. 7. An Irregular Figure



*An Irregular
Prismoid
Fig. 23. Page 116.*

Fig. 18.
Part 2. Chap. XX

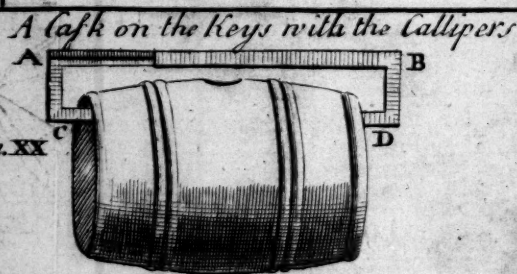
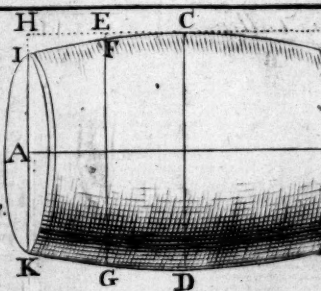


Fig. 19.
page 177.



allons. See it explained on page 35. 36.

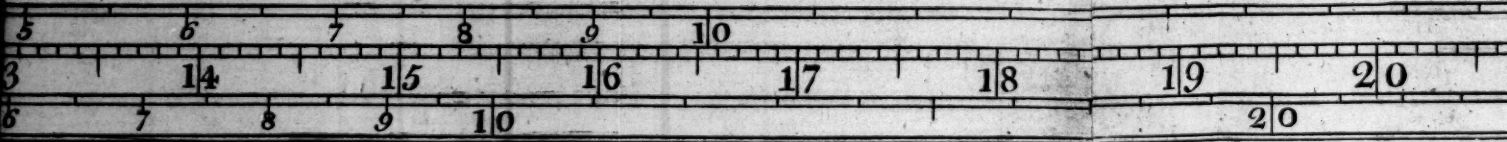


Figure.
Page 70



Fig. 8. A Pentagon.
Page 71

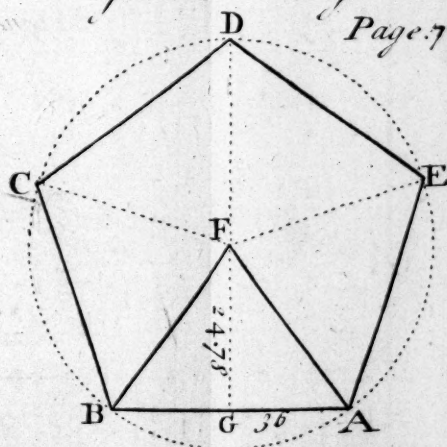


Fig. 9. A Sector of a Circle.
Page 73

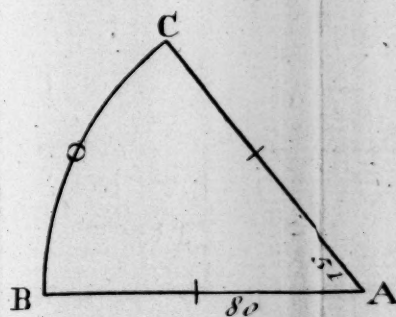
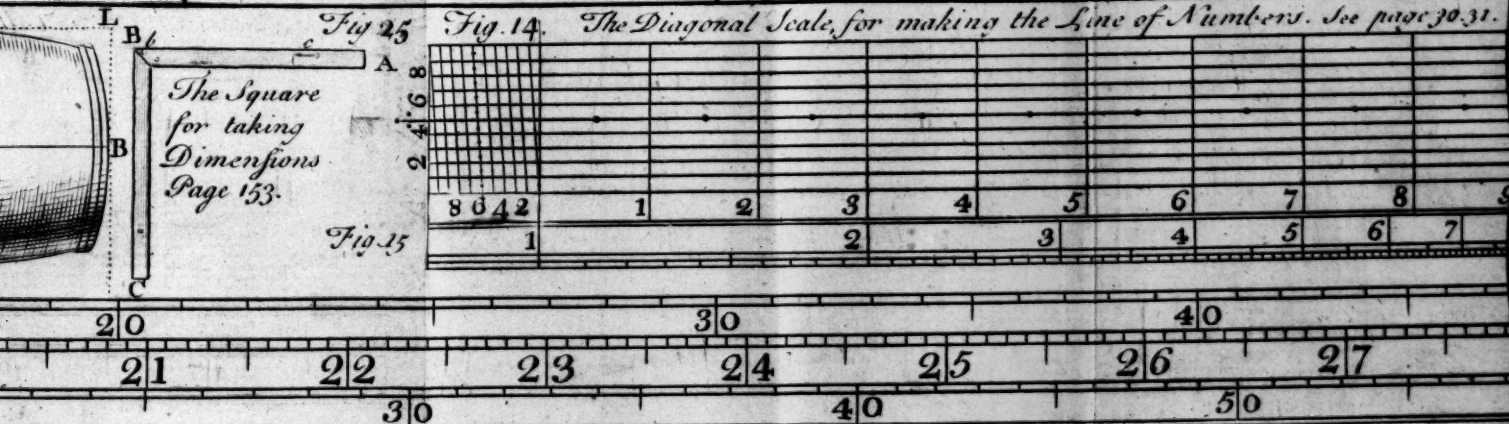
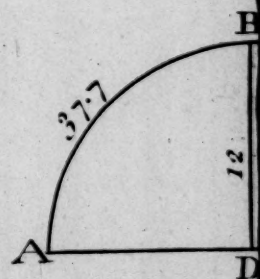


Fig. 10. A Memicircle



Circle.
Page. 73

Fig. 10. A Semicircle, or half a Circle.
Page. 74

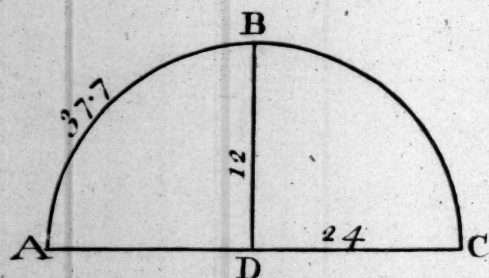


Fig. 11. A Quadrant, or a quarter of a Circle.
Page. 76

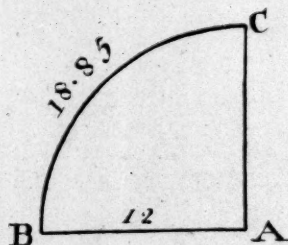


Fig. 12. Concentric, or Parallel Circles. With the Segments EAF & FBE
Page. 77
582

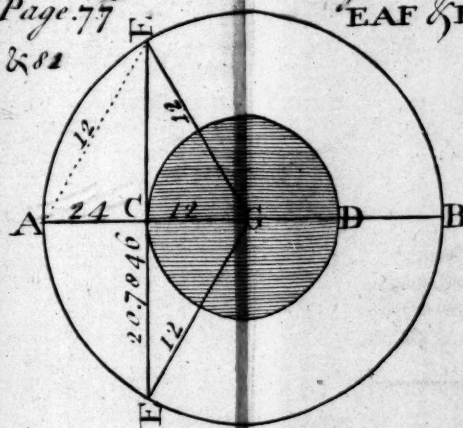
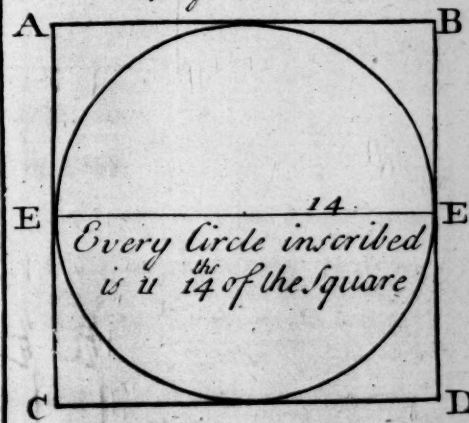


Fig. 17
page 64

Plate. 1.



Line of Numbers. See page 30, 31.

Fig. 14

Fig. 26. The Square when Shut See Page 153.

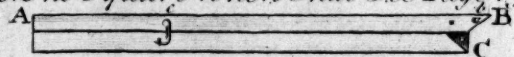
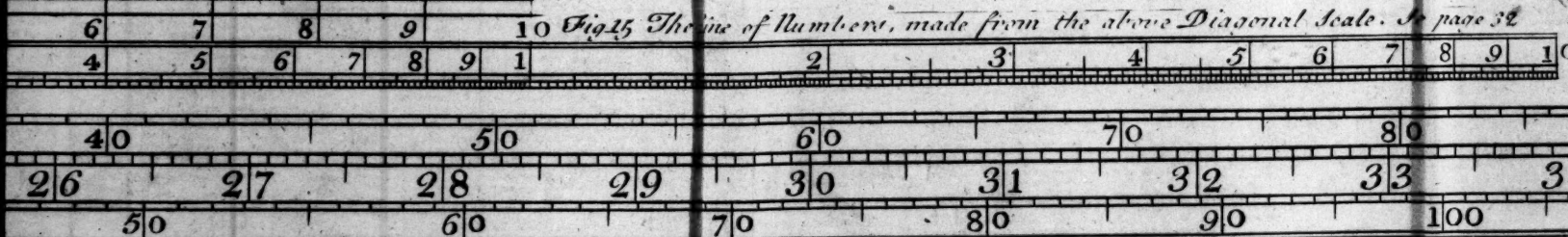


Fig. 25 The line of Numbers, made from the above Diagonal Scale. See page 32



An Irregular Back

Fig. 24. Page 136

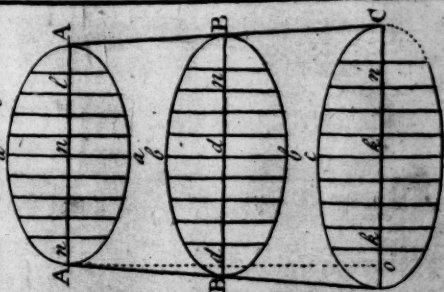


Fig. 13



Ch. XX. How to gauge Superficies.

65

the *Product* by 144 for *Feet*, by 282 for *Ale Gallons*, by 231 for *Wine Gallons*, and by 2150.4 for *Malt Bushels*, &c. as in the Table, Page 51.

Example. Let F G be 21.269 *Inches*, I demand the *Area* An *Example*, or *superficial Content* in *Feet*, *Ale Gallons*, *Wine Gallons*, *Malt Bushels*, and *Tallow Pounds*?

Operation.
F G = 21.269
F G = 21.269

The Operation,

191421
127614
42538
21269
42538

144)452.370361(3.14 *Feet*.

282)452.37(1.6 *Ale Gallons*.

Other Examples

231)452.37(19.5 *Wine Gallons*.

2150.4)452.370(21 *Malt Bushels*.

30.28)452.370(14.9 *Tallow Pounds* gros.

By the Sliding Rule for *Ale*.

By the Sliding Rule.

A B A B
As 282 is to 21.3 so is 21.3 to 1.6 *Ale Gallons*.

Divisor Side Square Side Square

As the Gauge Point 282 upon A is to 21.3 the *Side of the Square* upon B, so is 21.3 the *Side of the Square* upon A, to 1.6 *Ale Gallons* upon B, the Answer required.

2. To guage a right-angled Parallelogram.

See Plate I. Fig. 2.

Of the Parallelogram.

Definition. A right-angled Parallelogram is a four-sided Figure, having its opposite Sides equal and parallel, and the Angles right.

Plate I. Fig. 2.

The RULE.

The Rule.

Multiply the Length by the Breadth, and divide the Product by 144 for *Feet*, by 282 for *Ale Gallons*, by 231 for *Wine Gallons*, by 2150.4 for *Malt Bushels*, and by 31.4 for *Pounds of Tallow* net.

Example. In the Figure before us, let the Side C D be 27.42 *Inches*, and A C 16, I demand the *Area* in *Feet*, *Ale Gallons*, *Wine Gallons*, *Malt Bushels*, and in *Tallow Pounds* net?

PART I.

F

Operation.

The Operation

Operation.

$$CD = 27.42$$

$$AC = 16.$$

$$\begin{array}{r} 16452 \\ 2742 \end{array}$$

$$\begin{array}{r} 16452 \\ 2742 \end{array}$$

Other Examples

$$144)438.72(3.04 \text{ Feet.}$$

$$282)438.72(1.55 \text{ Ale Gallons.}$$

$$231)438.72(1.89 \text{ Wine Gallons.}$$

$$2150.4)438.72(.204 \text{ Malt Bushels.}$$

$$31.4)438.72(13.97 \text{ Tallow Pounds net.}$$

By the Sliding Rule.

By the Sliding Rule for Feet.

A	B	A	B
As 144 is to 27.42	so is 16 to 3.04 Feet.		
Divisor	Length Breadth		

By the Sliding Rule for Wine Gallons.

A	B	A	B
As 231 is to 27.42	so is 16 to 1.89		
Gauge Point	Length Breadth Wine Gallons.		

That is, set 231, the Gauge Point for Wine in Square Measure, upon A, to 27.42 upon B, and against 16, the Breadth upon A is 1.89 Wine Gallons upon B, the Area sought*.

Of the Rhombus.

3. To gauge a RHOMBUS.

See Plate I. Fig. 3.

Definition.

Definition. A Rhombus has four equal Sides, and four Angles, two opposite are obtuse, and the other two opposite are acute: it is plain from the Figure that the oblong A, D, E, F, is equal to the Rhombus A, B, C, D.

The Rule.

The RULE.

Multiply $AD = FE$ into $AF = DE$, and divide the Product by 144, for Feet, &c. as below; and the several Quotients are the respective Areas in those Quantities unto which the Divisors belong.

An Example.

Example. Admit the Side of the Rhombus $AD = 20$, and the Perpendicular $DB = 17.5$ Inches, I demand the Area in Feet, Ale, Wine, Malt Bushels, and Pounds of Hard Soap? Operation.

* Note, You may take the Gauge Points upon B, if you please, and you will have the same Answer.

Ch. XX. How to gauge Superficies.

67

Operation.

$$A F = 17.5$$

$$A D = 20$$

$$144)350.00(2.43 \text{ Feet.}$$

$$282)350.00(1.24 \text{ Ale Gallons.}$$

$$231)350.00(1.51 \text{ Wine Gallons.}$$

$$2150.4)350.000(.16 \text{ Malt Bushels.}$$

$$27.14)350.00(12.8 \text{ Pounds of Hard Soap.}$$

By the Sliding Rule for Wine Gallons.

As 231 is to 20 so is 17.5 to 1.51 Wine Gallons.

The Operation.

Other Examples

By the Sliding Rule.

3. To gauge a RHOMBOIDES.

See Plate I. Fig. 4.

Definition. A Rhomboides hath its opposite Sides and Angles equal, but the Angles not right, nor all the Sides equal. The oblong A, F, E, D, is equal to the Rhomboides, A, B, C, D, as is plain from the Figure.

The RULE.

The Rule.

Multiply the Side A D into the Perpendicular D E, and divide the Product as below, you will have the Area in each respective Quantity.

Example. Let the Side A D be = 20, and the Perpendicular D E = 14.75, I demand the Area in Feet, Ale, and Wine Gallons, in Malt Bushels, and Pounds of Green Soap?

Operation.

$$D E = 14.75$$

$$A D = 20$$

$$144)295.00(2.05 \text{ Feet.}$$

$$282)295.00(1.04 \text{ Ale Gallons.}$$

$$231)295.00(1.27 \text{ Wine Gallons.}$$

$$2150.4)295.0000(.137 \text{ Malt Bushels.}$$

$$25.67(295.0000(11.49 \text{ Pounds of green soft Soap.}$$

By the Sliding Rule for Malt Bushels.

As 2150.4 is to 20 so is 14.75 to .137 Malt Bushels.

For Green soft Soap.

As 25.67 is to 20 so is 14.75 to 11.49 Pounds of Green soft Soap.

F 2

5. 40

Operation.

Other Examples

By the Sliding Rule.

Of the Triangle

5. To gauge a TRIANGLE.

See Plate I. Fig. 5.

Definition.

Definition. A Triangle is a Figure of three Sides, and consequently as many Angles; if the three Sides be equal, then it is called an *equilateral Triangle*; if two be equal, it is called an *Isocles Triangle*; if all the Sides be unequal, so that it have no right Angle in it, it is called an *oblique one*. Triangles are all measured by the following general

The Rule.

R U L E.

From any Angle, as B, let fall the Perpendicular * B D upon the Base A C, then multiply half the Perpendicular by the Base, the Product will be the Area of the Triangle in the same Measure the Dimensions were taken in.

A second Rule.

Or,
Multiply half the Base by the whole Perpendicular: This Product is equal to the Area.

A third Rule.

Or,
Multiply the whole Base by the whole Perpendicular, and half this Product is the Area as before.

Euclid XLI. 1.

The Reason of the Rule is, that every Triangle is half its circumscribing Parallelogram, as is evident from the Figure.

An Example.

Example. Let the Base A C be 20.787 Inches, and the Perpendicular B D 18; I demand the Area of the Triangle A, B, C, in Feet, Ale Gallons, Wine Gallons, Malt Bushels, and Pounds of soft Soap?

The Operation.

Operation.

$$\begin{array}{r} A C = 20.787 \\ \text{Half of } B D = 9 \end{array} \left. \vphantom{\begin{array}{r} A C \\ \text{Half of } B D \end{array}} \right\} \text{Inches.}$$

$$144)187.083(1.299 \text{ Feet.}$$

Other Examples

$$282)187.083(.663 \text{ Ale Gallons.}$$

$$231)187.083(809 \text{ Wine Gallons.}$$

$$2150.4)187.083(.08 \text{ Malt Bushels.}$$

$$25.56)187.083(7.3 \text{ Pounds of White soft Soap.}$$

By the Sliding Rule.

By the Sliding Rule for White soft Soap.

$$A \quad B \quad A \quad B$$

As 25.6 is to 20.79 so is 9 to 7.3.

Note.

N. B. The Area of a Triangle may be found without knowing the Perpendicular, by having the three Sides given, as in Page 26.

6. To

* A Perpendicular is the shortest Line that can be drawn from the Angle B to the Side A C.

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6. To gauge a TRAPEZIUM.

Of the Trapezium.

See Plate I. Fig. 6.

Definition. A Trapezium is any Figure that has four unequal Sides, as Fig. 6. wherein the Line A C is called a * Diagonal, B F and D E are Perpendiculars to the Diagonal A C, which divides the Trapezium into two Triangles, as A B C and A D C.

The R U L E.

The Rule.

Take your Dimensions in Inches, and multiply half the Sum of the Perpendiculars, by the Base or Diagonal A C, the Product is the Area in Inches; which divide by 144 for Feet, by 282 for Ale Gallons, by 231 for Wine, by 2150.4 for Malt Bushels; and by 34.8 for a Pound of Raw Starch.

Example. Let the Diagonal A C be 78 Inches, D E 23, and B F 15.5; what's the Area in Feet, Ale Gallons, Wine Gallons, Malt Bushels, and Pounds of Raw Starch,

Operation.

The Operation.

$$D E = 23$$

$$B F = 15.5$$

$$\text{The Sum} = 38.5$$

$$\text{Half the Sum} = 19.25$$

$$A C = 78$$

$$15400$$

$$13475$$

$$144)1501.50(10.42 \text{ Feet.}$$

$$282)1501.50(5.32 \text{ Ale Gallons.}$$

$$231)1501.50(6.50 \text{ Wine Gallons.}$$

$$2150.4)1501.50(.69 \text{ Malt Bushels.}$$

$$34.8)1501.50000(43.146 \text{ Raw Starch.}$$

By the Sliding Rule for Ale Gallons.

By the Sliding Rule,

A B A B
As 282 is to 78 so is 19.25 to 5.32 Ale Gallons.

For Starch.

A B A B
As 34.8 is to 19.25 so is 78 to 43.146 Pounds of Raw Starch.

F 3

7. To

* Diagonal is derived from δια, Dia, and γωνία gonía, a Corner.

How to gauge Superficies. Part I.

7. To gauge an IRREGULAR Figure.

See Plate I. Fig. 7.

Definition.

Definition. All Figures that have more than four Sides, and those unequal, are called, by Geometricians, Irregular POLYGONS.

The Rule.

The RULE.

These Figures must be first reduced into Triangles and Trapeziums, and then gauged, as has been already shewn.

So the Figure before us will be reduced into one Trapezium, and one Triangle by drawing the Line AD: Then let the Dimensions be as in the Figure.

Operation,

First, For the Area of the Trapezium A D E F A.

Operation.

For the Triangle ABD.

$$DI = 29.25$$

$$\frac{1}{2} AK = 12.0$$

$$FH = 13.5$$

$$BD = 49.8$$

$$\text{Sum} = 42.75$$

$$960$$

$$\text{Half} = 21.375$$

$$1084$$

$$AE = 47.$$

$$480$$

$$149625$$

$$598.00$$

$$85500$$

$$ADEFA = 1004.625$$

$$ABD \text{ add } 598$$

$$144)1602.625(11.129 \text{ Feet.}$$

$$282)1602.625(5.683 \text{ Ale Gallons.}$$

$$231)1602.625(6.937 \text{ Wine Gallons.}$$

$$2150.4)1602.6250(.745 \text{ Mali Bushels.}$$

$$30.28)1602.625(52.9 \text{ Tallow Pounds gross.}$$

By the Sliding
Rule.

By the Sliding Rule for Wine.

Here you must make two Operations, one for each Part, and adding their Areas together, gives the Content of the whole Figure.

First, for the Trapezium, A D E F A.

A	B	A	B
---	---	---	---

As 144 is to 21.4 so is 47 to 6.16 Feet.

Secondly for the Triangle A B D.

A	B	A	B
---	---	---	---

As 144 is to 49.8 so is 12 to 4.15 Feet.

Area ADEFA	add	6.96	Feet.
------------	-----	------	-------

The Content of the whole

$$11.11 \text{ Feet.}$$

For

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For Ale.

B A B A B A
As 282 is to 47 so is 21.4 to 3.55 As 282 is to 49.8 so is 12 to 2.13.
Add 2.13

Content, or Area 5.68 Ale Gallons.

8. To gauge Regular POLYGONS.

See Plate I. Fig. 8.

Of regular Polygons.

Definition. All Figures that have more than four Sides, and those equal, are called Regular POLYGONS: If it has five equal Sides it is called a *Pentagon*; if it has six equal Sides it is a *Hexagon*; if seven equal Sides it is a *Heptagon*, &c. See the following Table on Page 72, by which it is evident they take their Names from the Number of Sides that bounds them.

The RULE.

The Rule.

Find the Area of one of the Triangles, (as has been taught on Page 68;) multiply that Area by the Number of Triangles, and you have the Area of the Polygon*.

Example in a Pentagon. Let the Dimensions be as in the Figure: I demand the Area of the Polygon in Feet, Ale, Wine, Malt, and soft Soap?

An Example.

Operation.

The Operation.

B A = 36
Half of F G = 12.39
B A = 36
7434
3717
446.04
Number of Sides 5

144)2230.20(15.48 Feet.

282)2230.20(7.91 Ale Gallons.

231)2230.20(9.65 Wine Gallons.

2150.4)2230.200(1.03 Malt Bushels.

25.67)2230.200(86.87 Pounds of soft Soap.

F 4

By

* If you multiply half the Sum of the Sides, by the nearest Distance of any Side from the Center (equal to the Perpendicular) and divide, or multiply by the Divisors or Factors in the Table, Page 51 you will have the Area of the Polygon. So B A = 36, being X 5, gives 180, its half is 90, this X by F G = 24.78 becomes 2230.20 the Area in Inches, as above.

How to gauge Superficies. Part. I.

By the Sliding Rule.

By the Sliding Rule for Feet.

Set 446 the Area of the Triangle on B, to the Divisor 144 on A, and against 5, the Number of Sides on A, is 15.5 on B, the Area of the Pentagon in Feet, viz.

A B A B
As 144 is to 446 so is 5 to 15.5 Feet.
For Ale.

A B A B
As 282 is to 446 so is 5 to 7.91 Ale Gallons.
Or you may say;

A B A B
As 282 is to 90 so is 24.78 to 7.91 Ale Gallons.
Or,

B A B A
As 282 is to 24.78 so is 90 to 7.91 Ale Gallons.

The following Table of all the Regular Polygons to twelve Sides, is constructed thus.

Find the Center of a Circle that will circumscribe the Polygon, then because in every Circle there are 360 Degrees, divide the said Circumference by the Number of Sides of the Polygon, and the Quotient is the Quantity of the Angle at the Center; from this Center, let fall a Perpendicular, as F G in Figure 8. Plate I. and there is formed a right-angled plane Triangle, as AGF = BGF; then supposing the Base BA to be one Inch, BG = GA will be half an Inch. The Angle GFA = GFB = 36 Degrees, and FGA = FGB = 54 Degrees are given, to find the Perpendicular G F, which by Plane Trigonometry I find equal to .688 decimal Parts of an Inch. The Area in Square Inches is 1.72; in Ale Gallons .006099; in Wine Gallons .007445; and in Malt Bushels .0007798, &c.

A TABLE of Regular POLYGONS.

The Names, the Sides being one Inch.	The Angle at the Centre.	The Perpendicular.	The Area in Square Inches.	The Area in Ale Gallons.	The Area in Wine Gallons.	The Area in Malt Bushels.
A Pentagon	72 00	.688	1.72	.006099	.007445	.0007798
An Hexagon	60 00	.866	2.598	.009212	.011246	.001208
An Heptagon	51 26	1.038	3.633	.012883	.015727	.001689
An Octagon	45 00	1.207	4.828	.017120	.020900	.002245
A Nonagon	40 00	1.374	6.183	.021925	.026766	.002875
A Decagon	36 00	1.539	7.695	.027287	.033311	.003579
An Undecagon	32 44	1.702	9.361	.033195	.040523	.004353
A Duodecagon	30 00	1.866	11.196	.039702	.048467	.005205

The

The Use of the preceding Table.

Multiply the Square of the Side of any regular * POLYGON by the common Multiplier of any of the Bodies in the Table; and the Product is the Area of that Body in Feet, Ale Gallons, Wine Gallons, or Malt Bushels respectively.

The Use of the Table of Polygons.

Example. Let the Area of the Pentagon above, be required in Feet, Ale Gallons, Wine Gallons, and in Malt Bushels ? An Example.

BA Squar'd which is 1296, being \times by .0119444 gives 15.48 Feet

$$\text{And } \begin{cases} 1296 \times .006099 = 07.90 \text{ Ale Gallons.} \\ 1296 \times .007445 = 9.65 \text{ Wine Gallons.} \\ 1296 \times .0007798 = 1.01 \text{ Malt Bushels.} \end{cases}$$

9. To gauge a Sector of a Circle.

Of a Sector of a Circle.

See Plate I. Fig. 9.

Definition. A sector of a Circle is a Figure bounded by two Radius's, or Semi-diameters of a Circle, having a Part of the Periphery, or Circumference for its Base. Definition.

The R U L E.

The Rule.

Multiply the Radius or Semi-diameter by half the Arch of the Sector; or the whole Arch line by half the Leg or Semi diameter; and divide the Product by 144 for Feet, by 282 for Ale Gallons, by 231 for Wine Gallons, and by 2150.4 for Malt Bushels, &c. and you will have the Area in each particular Quantity.

How to find the Length of any Arch, or Part of a Circle without measuring of it.

Double the Semi-diameter, and that gives the Diameter of the Circle, of which the Arch B C is a Part; then find the Circumference of the Circle (as has been taught in Page 55.) and also the Quantity of the Angle at the Center A, as I have taught in my Mechanic Dialling, Page 72. Then say, As the whole Circumference of the Circle 360 Degrees, is to the whole Circumference in Inches; so is the Arch B C in Degrees, to the Arch B C in Inches. How to find the Length of an Arch Line.

Example. Let the Leg, or Semi-diameter B A = A C be 80 Inches, and the Angle at A 51 Degrees; how many Inches is the Arch B C ? An Example.

Operation.

As 1 is to 3.14159 so is 160 to 502.654
Unity. Circumf. Diam. Circumf.

The Operation.

Then,

* Note, I have purposely omitted the Area in Feet in the Table; but if you want to find the Area of any Polygon in Feet, you may obtain a Factor for that Purpose, by dividing the Area in Inches by 144; thus for a Pentagon, it is .0119444.

Then,

A	B	A	B
As 360 is to	502.654	so is	71.2
Degr.	Inches	Degr.	Inch.

} C B.

Now for the Area of the Sector.

$$\begin{array}{r} CB = 71.2 \\ \text{Half } BA = 40 \\ \hline \end{array}$$

144) 2848.00 (19.77 Feet.

282) 2848.000 (10.099 Ale Gallons.

231) 2848.000 (12.329 Wine Gallons.

2150.4) 2848.0000 (1.324 Malt Bushels.

34.8) 2848.00000 (81.839 Pounds of Starch.

By the Sliding Rule.

By the Sliding Rule.

A	B	A	B
144	71.2	40	19.8 Feet.
282	71.2	40	10.1 Ale Gallons.
231	71.2	40	12.3 Wine Gallons.
2150.4	71.2	40	1.32 Malt Bushels.
34.8	71.2	40	81.839 lb. green raw
Divisors	Arch	$\frac{1}{2}$ Leg	Area [Starch.

To gauge a Semi-Circle.

10. To gauge a Semi-Circle.

See Plate I. Fig. 10.

Definition. A Semi-Circle is bounded by the Diameter A C, and half the Circumference A B C.

The Rule.

THE RULE.

Multiply half the Circumference $ABC = 37.7$ by one Fourth of the Diameter, and the Product is the Area in Inches; which divide by 144, 282, 231, 2150.4, will give the Area in Feet, Ale Gallons, Wine Gallons, and Malt Bushels respectively.

Or,

Another Rule. Divide the Square of the Diameter by double the Divisors for Circles; and the Quotient will give you the Area as before.

Example by the Pen.

Example. Admit the Diameter A C be 24 Inches, and the half-Circumference A B C = 37.7; I demand the Area of the Semi-Circle in Feet, Ale, Wine, Malt, and Pounds of Hard Soap?

1. Operation

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1. Operation by Square Inches.

Half the Circumference ABC = 37.7

One fourth of the Diameter = 6

144) 226.20 (1.57 Feet.

Two several
Ways of finding
the Area.

2. Operation by Circular Inches.

Diameter AC 24 Square = 576

Divisor 183.34 Half = 288.0000 (1.57 Feet.

Feet.

For A L E.

Square Measure.

Circular Inches.

Ale.

282) 226.2000 (.8021

359.05) 288.200000 (.8021

...

....

For W I N E.

Square Measure.

Circular Measure.

Wine.

231) 226.2000 (.9792

294.118) 288.0000000 (.9792

For M A L T by Square Inches.

2150.4) 226.20000 (.1052 Malt Bushels.

Malt Bushels.

By Circular Inches.

2738.) 288.0000 (.1052 Malt Bushels.

Malt Bushels.

For hard S O A P.

Thus by Square Measure: Or, Thus by Circular Measure.

Hard Soap.

27.14) 226.2000 (8.33

34.56) 228.0000 (8.33

By the Sliding Rule.

By the Sliding
Rule.

By Square Measure.

A

B

A

B

As 144 is to 37.7 so is 6 to 1.57 Feet.

Feet.

Divisor Arch $\frac{1}{2}$ Rad Area

Or,

By Circular Measure.

D

C

D

C

As 13.54 is to 1 so is 24 to 3.14 Area whole Circle.

Circular.

Gauge Pt Unity. Diam. $\frac{1}{2}$ = 1.57 Area Semi-Circle.

As

How to gauge Superficies. Part. I.

On the Lines
A B.

$$As \left\{ \begin{array}{l} 282 \\ 231 \\ 2150.4 \end{array} \right\} \text{ is to } \left\{ \begin{array}{l} 37.7 \\ 37.7 \\ 37.7 \end{array} \right\} \text{ so is } \left\{ \begin{array}{l} 6 \\ 6 \\ 6 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} 0.8 \text{ Ale Gallons.} \\ 0.98 \text{ Wine Gallons.} \\ 0.1 \text{ Malt Bushels.} \end{array} \right.$$

Or,

Half the Square of the Diameter divided by the Circular Divisors in Page 51, will give the same Area as by the other two Methods above.

Or,

By the Gauge Points on the Lines C and D in Circular Measure.

On the Lines
C D.

$$As \left\{ \begin{array}{l} 18.94 \\ 17.14 \\ 52.32 \\ 5.88 \end{array} \right\} \text{ is to } \left\{ \begin{array}{l} 1 \\ 1 \\ 1 \\ 1 \end{array} \right\} \text{ so is } \left\{ \begin{array}{l} 24 \\ 24 \\ 24 \\ 24 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} 1.6 \text{ Ale Gallons. } 0.8 \\ 1.96 \text{ Wine Gallons. } 0.98 \\ .21 \text{ Malt Bushels. } 0.1 \\ 16.66 \text{ Hard Soap. } 8.33 \end{array} \right.$$

Gauge Pt. Unity Diam. Area of the Circle $\frac{1}{2}$ a Circle, &c.

Because the Diameter of the Circle is taken, you must take the half of those Areas for the Area of the Semi-circle, as you see them stand on the right Hand.

To gauge a
Quarter of a
Circle.

II. To gauge a Quarter of a Circle.

See Plate I. Fig. II.

Definition.

Definition. A Quarter of a Circle is bounded by two Radii's or Legs, meeting in the Centre, and cutting each other at right Angles at A, on which the Arch B C is drawn.

The RULE.

The Rule.

Multiply half the Arch by the Radius, or Leg, or half the Leg by the whole Arch; either of which gives the Area in the same Measure the Dimensions are taken in.

When the Dimensions are taken in Inches, divide by the same Divisors as in the Sector and Semi-circle, and you will have the Area in Feet, Ale, Wine, Malt, &c.

Example by the
Pen.

Example. Admit the Leg A B be 12 Inches, and the Arch B C 18.85; what is the Area in the above-mentioned Example?

Operation,

Operation.

The Operation.

Arch 18.85
Half B A = 6

144) 113.100 (0.785 Feet.

282) 113.100 (0.401 Ale Gallons.

231) 113.100 (0.4896 Wine Gallons.

2150.4) 113.10000 (0.0526 Malt Bushels.

30.28) 113.10000 (3.735 Pounds Tallow gros.

By the Sliding Rule.

By the Sliding Rule.

For Square Measure.

A	B	A	B
144.	18.85	6	0.785 Feet.
282.	18.85	6	0.401 Ale Gallons.
231.	18.85	6	0.49 Wine Gallons.
2150.4	18.85	6	0.053 Malt Bushels.
30.18	18.85	6	3.74 Pounds Tallow
Divisors	Arch	$\frac{1}{2}$ Radius	Area [gros.]

2. By the Gauge Points on the Lines C and D.

D	C	D	C
13.54	1	12	.78 Feet.
18.94	1	12	.4 Ale Gallons.
17.14	1	12	.49 Wine Gallons.
52.32	1	12	.053 Malt Bushels.
6.21	1	12	3.74 Pounds Tallow
G. Point	Unity	Radius	Area [gros.]

12. To gauge the Segment of a Circle.

Of the Segment of a Circle.

See Plate I. Fig. 12.

Definition. A Segment of a Circle is a Part cut off by a Right Line, as E F (less than the Diameter) drawn within the Circle; so that E A F is a Segment less than a Semi-circle, and F B E is greater than a Semi-circle.

Definition.

The RULE.

The Rule.

From the Segment make a Sector; then the Reason of Measuring (or Gauging) the Segment is evident: For find the Area of the Sector GEAF, and also the Area of a Triangle GEF; the Segment of then subtract the Area of the Triangle from the Area of the Sector, and there will remain the Area of the Segment E A F; which

An easy Way to find the Area of a Circle.

How to gauge Superficies. Part I.

*which if you subtract from the Area of the whole Circle, there will remain the Area of the Segment * F B E.*

Because in gauging a Sector of a Circle, the Length of the Arch Line is required to be known, I shall here add another Way than what was shewn in Page 75, to find the same.

The R U L E.

The Rule.

Multiply the Chord of half the Arch, viz. A F by 8, and from the Product subtract the Chord of the whole Segment, viz. E F; divide the Remainder by 3, and the Quotient is the Length of the Arch, very near the Truth.

An Example.

Example. Let the Chord of half the Arch = A F be 12, and the Chord of the Segment = E F be 20.7846; I demand the Length of the Arch E A F?

Operation.

The Operation.

$$\begin{array}{r} \text{A F} = 12 \\ \text{Common Multiplier} \quad 8 \end{array}$$

$$\begin{array}{r} \text{Product} \quad 96. \\ \text{E F} - 20.7846 \end{array}$$

$$3) 75.2154 \quad (25.0718 = \text{E A F.}$$

These Things being well understood, the Learner may now proceed to find the Area of the Segment E A F C, according to the Rule given above.

A further Operation.

Operation.

$$\begin{array}{r} \text{E A F} = 25.0718 \\ \frac{1}{2} \text{ E G} = 6 \end{array}$$

$$\begin{array}{r} \text{E F} 20.7846 \\ \frac{1}{2} \text{ C G} = 3 \end{array}$$

$$\begin{array}{r} \text{Area of the Sector G E A F} 150.4308 \\ \text{Area Triangle subtract} \quad 62.3538 \end{array}$$

$$\text{G E C F } 62.3538$$

$$\text{Area of Segment E A F} = 88.0770$$

A second Way of finding the Area of the Segment of a Circle.

II. I shall here give a second Method of finding the Area of the Segment of a Circle, that so the young Student may not have any thing wanting to make him a compleat Gauger, Surveyor, &c.

The R U L E.

1. Square the Semi-diameter or Radius of the Circle A G, and multiply that Square by 7.

2. Multiply

* Several Authors use a Table of the Segments of a Circle; but that being a troublesome Method, it is omitted in this Work.

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2. Multiply the Radius AG by 4, and that Product by CG, (that is, the Difference between the Versed Sine* AC and Radius AG.)

3. Square the said Distance CG, and multiply its Square by 3, add this Product to the Product got by the second Rule, and subtract that Sum from seven Times the Square of the Radius (or the Product got by the first Rule;) and what remains is your Dividend.

4. Multiply the Radius of the Circle by 4.5, and CG by 3; add these two Products together, and the Sum is the Divisor.

5. Divide the Dividend by the Divisor, and the Quotient multiply by half the Chord EF, viz. by EC, this last Product is the Area, or superficial Content of the Segment EAF; and so of any other Segment of a Circle whatsoever.

Example. Admit the Radius EG = FG be 12 Inches, and An Example. the Versed Sine AC = 6, the Difference between that and the Radius is CG = 6; I demand the Area of the Segment in Inches, Feet, Ale Gallons, Wine Gallons, Malt Bushels, and Pounds of Green Starch?

Operation.				
Radius 12	Radius 12	CG 6	The Operation.	
12	4	6		
144	48	36		
Common Multiplier = 7	6	3		
Product = 1008	288	108		
Subtract 396	108			
Dividend = 612	396			
Common Multiplier 4.5	CG 6			
Radius = 12	3			
Product 54.0	18			
Add 18.				
Divisor = 72.612.0(8.5				
EC = 10.3923				
The Quotient is a Multiplier 8.5				
519615				
831384				

Area 88.33455 Inches, which differs but .26758 hundredth thousandth Parts of an Inch from the Area found by the other Rule above-mentioned; that is, but a little more than a Quarter of an Inch.

(144)

* The Versed Sine of an Arch is a Segment of the Diameter of a Circle lying between the Foot of the right Sine, and the lower Extremity of the Arch.

How to gauge Superficies. Part I.

144) 88.33455 (.61343 Feet.

282) 88.33455 (.31324 Ale Gallons.

231) 88.33455 (.3824 Wine Gallons.

2150.4) 88.33455 (.041 Malt Bushels.

34.8) 88.33455 (2.5383 Green raw Starch Pounds.

Upon Hunt's Sliding * Rule.

On Hunt's Sliding Rule. For, as the Diameter 24 on A is to 100 on the Segments, so is the Versed Sine AC = 6, to the Segment 19.5.

Then, as 1 on B is to the Area of the Circle 452.4 on A, so is the Segment on B to the Area of the Segment on A = 88 Inches.

1. Having the Diameter of a Circle, and the Chord of its Segment, to find the Versed Sine CA.

The RULE.

The Rule. From the Square of the Radius EG subtract the Square of EC, the Square Root of the Remainder is CG, then AG — CG = AC.

Also,

2. By having the Chord EF, and the Versed Sine CA given to find the Diameter AB.

The RULE.

The Rule. As AC is to EC, so is EC to CB, to which add AC, the Versed Sine, the sum is the Diameter. Euclid VI. 13.

By the Sliding Rule.

A B A B
As 6 is to 10.3923 so is 10.3923 to 18 + 6 = 24 the Diam.

3. The Diameter AB, and the Versed Sine AC being given, to find the Chord EF.

The Rule.

The RULE.

From half the Diameter AG = 12. subtract AC = 6, there remains CG = 6: Then from the Square of EG subtract the Square of CG, the Square Root of the Remainder is EC, which doubled gives EF, the Chord sought.

13. To

* Upon Hunt's Sliding Rule there is a Line of Segments, by which the Area of the Segment of a Circle may be found, as he shews in his Mathematical Companion, Pages 168 and 169.

13. To gauge the Space D B.

The Space D B.

See Plate I. Fig. 12.

Definition. Concentric or Parallel Circles, are such as have the same Center, such are the Circles A, C, having the same Center G.

The R U L E.

The Rule.

From the Area of the greater Circle, subtract the Area of the less Circle ; the Remainder will be the Area of the Space D B.

Example. Let the Diameter A B be 24, C D 12 Inches, what's the Area of the Space B D ? An Example.

Operation.

The Operation.

Area of the { A B = 452.4
Circle. { C D = 113.1 subtract.

144) 339.300 (2.356 Feet.

282) 339.300 (1.203 Ale Gallons.

Other Examples

231) 339.300 (1.468 Wine Gallons.

2150.4) 339.3000 (.157 Malt Bushels.

14. To gauge an Ellipsis.

Of the Ellipsis.

See Plate II. Fig. 1.

Definition. An Ellipsis is bounded by a Curve Line, in which there is not any Part of a Circle ; it is generated from the Section of a Cone, cut by a Plane obliquely thro' the Axis, is longer one Way than the other ; the longest Diameter A D is called the Transverse, and the shortest G F the conjugate Axis, Plate II. Fig. 8. E F is an Ellipsis by cutting the Cone.

It is also a Geometrical Mean between two Circles, whose Diameters are equal to the transverse and conjugate Axes of the Ellipsis.

Hence it follows, that the Square Root of the Product of the transverse and conjugate Axes, will be the Diameter of a Circle, whose Area will be equal to the Area of the Ellipsis.

Note, Every Ellipsis has two Focal Points, viz. I and K, through which the Latus Rectum B H or C E passes, cutting the transverse Axis at Right Angles ; and for the Length of either it will always hold thus.

A D G F G F B H = C E

As 61 is to 47.5 so is 47.5 to 37 feet.

PART I.

G

The

The Rule.

The R U L E.

If you multiply the transverse by the conjugate Axis, and divide the Product by the circular Divisors, it will give the Area in the same Measure.

An Example.

Example. Let the transverse Axis AD be 61 Inches, and the conjugate Axis GF 47.5; I demand the Area in Feet, Ale, and Wine Gallons, in Malt Bushels, and in Pounds of soft Soap.

The Operation.

Operation.

$$GF = 47.5$$

$$AD = 61$$

$$\underline{475}$$

$$2850$$

$$183.34) 2897.50000 \text{ (15.804 Feet.)}$$

Other Examples

$$359.05) 2897.5000 \text{ (8.07 Ale Gallons.)}$$

$$294.118) 2897.50000 \text{ (9.85 Wine Gallons.)}$$

$$2738.) 2897.50 \text{ (1.05 Malt Bushels.)}$$

$$32.54) 2897.5000 \text{ (89.04 White soft Soap.)}$$

By the Sliding Rule.

By the Sliding Rule.

	A	B		A	B
	183.34	61		47.5	15.804 Feet.
	359.05	61		47.5	8.07 Ale Gallons.
As	294.118	61	is	47.5	9.85 Wine Gallons.
	273.8	61	is	47.5	1.05 Malt Bushels.
	32.54	61	is	47.5	89.04 White soft Soap.
	G. Point	Tr. Axis		Conj. Axis	Content

It may not perhaps be improper, if I here take some farther Notice of the *Ellipsis*, and common *Oval*, since most Books of Gauging, that I have seen, are defective in this Respect.

To draw an Ellipsis.

To describe an *Ellipsis*, to any transverse and conjugate Axes required.

See Plate VI. Fig. 1.

Let it be required to describe the *Ellipsis* C D E F, whose longest Diameter shall be equal to the given Line A, and the shortest to the given Line B.

First, Draw the Line CD, equal in Length to A; also E F equal in Length to B, and at right Angles with C D. Secondly, From

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From the Point E, as a Center, with a Radius C O or O D describe an Arch of a Circle, intersecting C D in the Points *f*, *b*. Lastly, Strike a Nail or Pin at *b*, and at *f*, and put a String or Thread round them, of such a Length, that the two Ends may just reach to E or F; hold these two Ends tight between your Fingers, with a black Lead Pencil (or any Thing proper to mark with) between them, and those two Ends being carried round, will cause the Pencil to describe the Ellipsis C E F D.

To describe the common (or Carpenter's) Oval to any Length and Breadth required.

To describe the common Oval.

See Plate VI. Fig. 2.

Let the longest Axis given be the Line A (as under Fig. 1.) and the shortest B.

First, Draw the Line A B equal in Length to A, and C D equal to the Line B, dividing A B equally at right Angles in *a*.

Secondly, Make A O equal to C D; and dividing O B into three equal Parts; set off two of those Parts from *a* to *b*, and from *a* to I; then with the distance I *b*, make two equilateral Triangles I d b and I e b whose Angles are the Centers: Then fix one Foot or Point of your Compasses in the Point *b*, and the other Point in B, and describe the Arch from *f* to *b*: Then keep your Compasses at the same distance, and put one Point in I, and describe the Arch *i*, A, *g*: Then extend your Compasses from the Point *e* to C, and describe the Arch from *i* to *f*; and keep your Compasses at that Distance, and put one Point in *d*, and describe the Arch *b*, D, *g*, will form the Oval required.

To find the Center and the two Axes of an Ellipsis.

To find the Center and two Axes of an Ellipsis.

Plate VI. Fig. 3.

Let A B C D be the Ellipsis proposed, whose Center and Axes are to be found.

Draw at Pleasure two parallel Lines E F, G H; bisect them in the Points I, K; then draw the Line *a b*, and bisect it in W. and upon W, as a Center, describe a Circle at Pleasure, as E L H, cutting the Ellipsis in the Points E L; draw the right Line E L, bisect it in *b*, and through the Points *b* W, draw the Axis A B, then through the Center W, draw the Axis C D parallel to the Line E L, and you have what was required.

15. To gauge the Segment of an ELLIPSIS.

Of the Segment or Ellipsis.

See Plate II. Fig. 1.

It has been before noted, that every Ellipsis is a Geometrical mean Proportional between the two Circles described on the transverse and conjugate Axes: So that (as has been already taught)

How to gauge Superficies. Part I.

taught) if you find the *Area* of the *Circle*, whose *Diameter* $GF = 47.5$ it will be 1772.05 *Square Inches*: Also the *Area* of the *Circle* * whose *Diameter* $AD = 61$ = to the *transverse Axis* of the *Ellipsis*, it will be 2920; the *Geometrical mean* between these two *Areas* is 2275, the *Area* of the *Ellipsis* in *Square Inches*.

A Synopsis of the Parts of an Ellipsis for gauging its Segment.

Here follows a short View of the several Parts of the *Ellipsis*, necessary to be known in the gauging of its Segment.

$$AD = 61$$

$$GF = 47.5$$

$$GI = AL = 30.5$$

$$IL = Bq = 19.2 + qC = BC \ 38.4$$

$$AI = 11.3$$

$$BH = CE = 37. \text{ferè}$$

$$LP = LG = 23.75$$

$$qL = BI = 18.5$$

$$Oq = qP = 14.89$$

$$SI = Ir = 23.7$$

$$Sr = vt = 47.4$$

Plate II. Fig. 1.
To find the Area of a Segment.

Now let it be required to find the *Area* of the Segment $BGCB = HFEH$: In order to do this, we must have in readiness the *Latus Rectum*, $BH = CE$, which, by the 14th Section hereof, will be found = 37.

All Segments of an *Ellipsis* and its inscribed *Circle*, whose *Bases* are parallel to the *transverse Axis*, and having the same *Height*, are in Proportion one to another as the *Area* of the *Ellipsis* to that of the *Circle*.

Whence as the *Area* of the inscribed *Circle* is to the *Area* of the *Ellipsis*, so is the *Area* of the circular Segment OPG to the *Area* of the elliptical Segment BGC . But first we must have in readiness half the *Chord* † of the Arch OGP , viz. $Oq = Pq$, which may be found by the Triangle LPq , for there is given $LP = 23.75$, being the *Radius* of the inscribed *Circle*, and $Lq = 18.5$, to find qP , which by the 47th of the first Book of *Euclid*, (as I have noted in Rule 3, Page 25.) I find to be 14.89.

These Things being known, proceed to find the *Area* of the *Circle's* Segment OPG , by the 12th Section of this Chapter; this I find to be 105.80834. Then say, as the conjugate *Axis* GF is to the *Area* of the *Circle's* Segment, so is the *transverse Axis* AD to the *Area* of the *Ellipsis's* Segment BGC .

See

* Note. You need not find the *Areas* of the *Circle* and *Ellipsis*; but instead thereof, make use of the *Transverse* and *Conjugate Axes* of the *Ellipsis*.

† *Chord*, in Geometry, is a *Right Line* connecting the *Extremities* of any Arch of a *Circle*, and resembles the *String* of a *Bow*, as in Plate II, Fig. 1. Sr , is the *Chord* of the Arch SAr ; and tv is the *Chord* of the Arch tDv ; OP is the *Chord* of the Arch OGP . And wx is the *Chord* of the Arch wFx , &c.

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See the Work.

Operation.

LP= 23.75	LP= 23.75	q L= 18.5
23.75	4	18.5
11875	95.00	925
16625	q L=18.5	1480
7125		185
4750	475	
	760	342.25
564.0625	95	† 3
Com. Multiplier 7		
3948.4375	1757.5	1026.75
Subtract 2784.25	1026.75	
	2784.25	LP= 23.75
Divid. =1164.1875		4.5
qL= 18.5		
Com. Multipliers 3		11875
		9500
55.5		106.875
		55.5

Divisor 162.375

162.375) 11.64.1875 (7.169×q P=14.89=105.80834

Now say :

GF Seg. OPG AD Seg. BGCB
 As 47.5 is to 105.80834 so is 61 to 135.8802
 Which doubled is the Sum of the Segment BCG }
 and HEF } 271.7604

2. For the Area of the Segment HBA=CED.

See Plate II. Fig. 1.

Before we can proceed in this, we must find the Length of Howtoproceed.
 the Chord of the Arch S A r = t D v, viz. r s = t v.

And because S I = v K is a mean Proportional between A I
 and I D, (by the Property of the Circle) I find it to be 23.7.
 Now observe to work as in the 12th Section of this Chapter,
 and find the Area of the Circle's Segment, and by that the
 Segment of the Ellipsis.

G 3

Operation.

* 4 is the common Multiplier.
 † 3 is the common Multiplier.

Of the Area of
 the Segment.

The Operation.	Operation.	
$A L = 30.5$	$A L = 30.5$	$I L = 19.2$
30.5	4	19.2
1525	122.0	384
915	$I L = 19.2$	1728
		192
<i>Square</i> 930.25	244	
<i>Multiplier</i> 7	1098	<i>Squared</i> 368.64
	122	3
6511.75		
<i>Subtract</i> 3448.32	2342.4	1105.92
	1505.92 add.	
<i>Dividend</i> 3063.43	3448.32	
	$I L = 19.2$	$A L = 30.5$
<i>Multiplier</i> 3	3	4.5
	57.6	1525
		1220
		137.25
		57.6 add.

Divisor 194.85
 $194.85) 663.430 (15.72 \times 23.7 = S I = 372.564 = S A r$

Now say :

$A D$ $Seg. Sr A$ GF $Seg. HBA.$
As 61 is to 372.564 so is 47.5 to 290.113
Tran. Diam. AreaCirc. Conj.Diam. multiply 2

Which doubled is the Sum of the Segments
 $S r A$ and $v t D =$ 580.2226
 $Seg. B G C B$ and $H F E H =$ 271.7604 } add.
 $Area$ of the Oblong $B C E H =$ 1420.8

Sum are the square Inches in the Ellipsis 2272.7830 Area.

A Proof of the
gauging the El-
lipis and its
Segments.

Now if these square Inches be divided by the proper Di-
visors for Feet, Ale, Wine, Malt Bushels, &c. we shall have
the Area of the Ellipsis in those Measures, as was found in
Page 82, where we gauged the Ellipsis; which is a Proof
that all the Operations concerning the Ellipsis and its Seg-
ments are truly performed.

Feet.

$144) 2272.783 (15.783$ Feet.

Ale,

$282) 2272.783 (8.05$ Ale Gallons.

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231)	2272.783	(9.839 Wine Gallons.	Wine.
2150.4)	2272.783	(1.05 Malt Bushels.	Malt.
25.56)	2272.783	(88.9 Green soft Soap.	Soap.

By the Sliding Rule.

By the Sliding Rule.

A	B	A	B
144	1	2272.783	15.783 Feet.
282	is	2272.783	8.05 Ale Gal.
231	to	2272.783	9.839 W. Gal.
2150.4	is	2272.783	1.05 M. Bush.
25.56	to	2272.783	88.9 Green soft
Divisor	Unity	Inches	Content [Soap.

The Area of all ELLIPTICAL Figures may be found by the following THEOREMS.

See Plate I. Fig. 21.

THEOREM 1. As the Rectangle of any two Abscissæ is to the Square of half the Ordinate which divides them; so is the Rectangle of any other two Abscissæ to the Square of half that Ordinate which divides them.

That is, As $Tg \times Sg$: the Square of PM :: $Td \times Sd$: the Square of DH .

THEOREM 2. As the Transverse Axis is to the Conjugate, so is the Conjugate to the Latus Rectum.

That is, as $TS : Nn :: Nn : HD = QL$.

THEOREM 3. As the Transverse Axis is to the Latus Rectum, so is the Rectangle of any two Abscissæ to the Square of their Semi-Ordinate.

That is, as $TS : HD :: Tb \times Sb$: the Square of Bb . By this Theorem the Lengths of any Number of equidistant Ordinates, rightly applied to the Conjugate Axis, and which determine the Curve, may be readily found.

THEOREM 4. As one Fourth of the Area of any Regular Ellipsis is to the Sum of any Number of equidistant Ordinates, rightly applied in that Ellipsis, multiplied into their Abscissæ; so is Unity, or 1, to the Sum of its like Number of equidistant Ordinates rightly applied, multiplied into their Abscissæ.---And because 3.42266 is the Sum of three Ordinates rightly applied, multiplied into the Abscissæ of any Curve whose Area is one Inch; it is therefore a general Divisor for three Ordinates rightly applied, and at equal Intervals multiplied into the Abscissæ of any Curve whose Area is greater than one Inch. Also 4.45086 is the general Divisor for 4 Ordinates; 5.47021, for 5 Ordinates; 6.48455, for 6 Ordinates; 7.49573, for 7 Ordinates; 8.50476, for 8 Ordinates; 9.51224, for 9 Ordinates; and 10.51858, for 10 Ordinates rightly applied in the same Manner. Plate I. Fig. 21.

Example. Let $TNSB$ represent an Ellipsis, whose Transverse Axis TS is 40 Inches, and Conjugate Nn 24, and the Dimensions are five Ordinates taken at equal Intervals, and consequently their common Distance will be four Inches; what is the Area thereof in Beer and Wine Gallons, supposing their Lengths as follows?

$IE = 14.4$, $HD = 19.2$, $GC = 21.9663$, $FB = 23.515$, $Nn = 24$. And on the other Side of the Figure $Nn = 24$, $OZ = 23.515$, $PM = 21.99663$, $QL = 19.2$, $RK = 14.4$.

The Sum of all these Ordinates is 209.2226, which multiplied by $AS = AT = 20$, gives 4124.4520, and this being divided by 5.47021 (the Divisor for 5 Ordinates) quotes 753.984, the Area in Square Inches; which divided by 282, or 231, gives 2.673 Beer Gallons, or 3.264 Wine Gallons.

G 4

16. To

Of a Parabola.

16. To gauge a PARABOLA.

See Plate II. Fig. 2.

Definition.

Definition. A Parabola is one of the Conic Sections generated by cutting the Cone with a Plane Parallel to the Side thereof. Thus (Plate II. Fig. 8.) if the Cone be cut by the right Line, G H parallel to the Side A B, that Section will be a Parabola, as is represented by Fig. 2. Plate II. And every Parabola is $\frac{2}{3}$ of its circumscribing Parallelogram; i. e. ABCA is $\frac{2}{3}$ of A E F C A; and the Triangle ABC is $\frac{1}{3}$ of the Parabola. These things may be easily proved, if we consider that AE and CF are each equal to B D; and that the Square of B C is equal to the Sum of the Squares of B D and D C.

The RULE.

The Rule.

Take your Dimensions in Inches and Decimal Parts; and multiply the Base AC by the Perpendicular B D, and divide the Product by 216 for Feet, by 423 for Ale Gallons, by 346.5 for Wine, by 3225.6 for Malt Bushels, and by 45.42 for Tallow Pounds, &c, the several Quotients will be the Areas of the Parabola in every respective Measure.

How to find the Divisors.

How to find the Divisors for a Parabola.

But first, I shall shew how the above Divisors are found.

<i>As 2 is to 3, so is</i>	{	144.	{	216.	<i>Feet.</i>
		282.		423.	<i>Ale Gallons.</i>
		231.		346.5	<i>Wine Gallons.</i>
		2150.4		3225.6	<i>Malt Bushels.</i>
		33.28		45.42	<i>Tallow Pounds gross.</i>
<i>Proportion</i>		<i>Divisors</i>	<i>Divisors for the Parabola.</i>		

An Example.

Example. Admit the Base of the Parabola A C be 40 Inches, and the Perpendicular or Axis B D 30 Inches; what is the Area of the Parabola in the Measures above-mentioned?

The Operation.

Operation.

$$A C = 40 \text{ Base.}$$

$$B D = 30 \text{ Axis.}$$

Feet.

$$216) 1200.00 \text{ (5.55 Feet.}$$

Ale.

$$423) 1200.00 \text{ (2.84 Ale Gallons.}$$

Wine.

$$346.5) 1200.000 \text{ (3.46 Wine Gallons.}$$

Malt Bushels.

$$3225.6) 1200.000 \text{ (.37 Malt Bushels.}$$

Tallow.

$$45.42) 1200.000 \text{ (26.4 Tallow Pounds gross.}$$

By

By the Sliding Rule on A and B.

By the Sliding Rule.

A	B	A	B
216.	40	30	5.55 Feet.
432.	40	30	2.84 Ale Gallons.
346. 5	40	30	3.46 Wine Gallons.
3225. 6	40	30	.37 Malt Bushels.
45.42	40	30	26.4 Tallow lb. gross.
Gauge Point	Base	Height	Content

Note, That the 40 in the Proportion above is the Measure of the Base of the Parabola, and the 30 is that of the Axis.

17. Of an HYPERBOLA.

Of an Hyperbola.

See Plate II. Fig. 8. and Plate III. Fig. 4.

Definition. An Hyperbola is a Section of a Cone so cut by a Definition. Plane, that being continued will intersect the other Side of the Cone produced beyond the Vertex, in some Point, as N.

As NK × DK is to	{	AK q	{	AK q	{	N a × D a	{	N b × D b	{	N c × D c	{	N d × D d	{	N e × D e	{	N f × D f	{	g a q	{	h b q	{	i c q	{	k d q	{	l e q	{	m f q	{	Of the Proportions.

The Square Root of which, are the Distances g a, h b, &c. in the same Parts, as A B is 60.

And thus find as many Ordinates as you please, or as you judge necessary, the Points g, b, i, k, l, m, n, o, p, q, r, s, will be in the Hyperbola.

To find the Area of the Hyperbola, multiply the transverse Of the Area. Diameter of the Hyperbola by the constant Factor .66, to this Product add that of the perpendicular Height of the Section by the constant Factor .53: Let the Sum of these two Products be divided by the Sum of the transverse Axis, and the perpendicular Height of the Hyperbola; then multiply this Quotient, the Base and Perpendicular of the Hyperbola, all three together, and the Product will give the Area required.

18. To gauge a CYCLOID or TROCHOID.

Of a Cycloid.

See Plate II. Fig. 3.

Definition. The Curve of this Figure is called by Mathematicians a Transcendent Curve, and may best be conceived to be generated by a Nail in a Coach-Wheel; for in every Revolution of the Wheel, this Curve is described. The Length of the whole Cycloidal Curve Line is equal to four times the Diameter of the generating Circle; and the Area of the Cycloidal Space is equal to three times that Circle. There are many curious philosophical Experiments depending upon this Curve; but they being foreign to the present Work, are here omitted.

To

To delineate a CYCLOID.

To delineate a Cycloid, Make the *Diameter* of the Circle BD of what *Quantity* you please, as suppose 60; then will the *Circumference* be 188.4954 of the same Parts; and the *Semi-circumference* 94.2477; divide the one half of the Circle in any Number of equal Parts, (the more the better) suppose 12, in the Points F, G, H, I, K, L, M, N, O, P, and divide the half Base AB into the like Number of equal Parts; through the equal Points in the Arch draw Lines parallel to AC, and lay BP from E to k, BO from F to i both ways, &c. So will a, b, c, d, e, f, g, h, i, k, be all in the Cycloid.

The Rule.

The RULE for gauging a CYCLOID.

Find the Area of the generating Circle in Inches, and multiply it by 3; then dividing by the proper Divisors, or multiplying by the proper Factors, we have the Area in Feet, Ale, Wine, Malt, &c.

An Example. Example. Let the Diameter of the generating Circle be 60 Inches; what is the Area of the Cycloidal Space?

The Operation.

Operation.

Diameter	60.
Circumfer.	188.4954
Half Cir.	94.2477
Half Diameter	30

Area 2827.4310

Multiply always by 3

Feet.	144)	8482.293	(58.905 Feet.
Ale.	282)	8482.293	(30.078 Ale Gallons.
Wine.	231)	8482.293	(36.717 Wine Gallons.
Malt.	2150.4)	8482.29300	(3.9454 Malt Bushels.
Starch.	34.8)	8482.29300	(243.754 Raw Starch.

By the Sliding Rule.

By the Sliding Rule.

D	C	D	C
As $\left\{ \begin{array}{l} 13.54 \\ 18.94 \\ 17.14 \\ 52.32 \\ 6.66 \end{array} \right\}$	is $\left\{ \begin{array}{l} 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{array} \right\}$ to	so $\left\{ \begin{array}{l} 60 \\ 60 \\ 60 \\ 60 \\ 60 \end{array} \right\}$ is	to $\left\{ \begin{array}{l} 19.635 \\ 10.026 \\ 12.239 \\ 1.315 \\ 81.25 \end{array} \right\}$
G. Point	Unity	Diam.	Content
			$19.635 \times 3 = 58.905 \text{ Feet.}$ $10.026 \times 3 = 30.078 \text{ Ale Gallons.}$ $12.239 \times 3 = 36.717 \text{ Wine Gallons.}$ $1.315 \times 3 = 3.945 \text{ Malt Bushels.}$ $81.25 \times 3 = 243.75 \text{ lb. of green Starch}$

19. To

19. To gauge a SPHERICAL TRIANGLE.

A Spherical Triangle.

See Plate I. Fig. 16.

Definition. A Spherical Triangle is that which is described on the Surface of a Globe, and is bounded by the Arcs of three great Circles of the Sphere. I well know this is foreign to the present Work; yet not doubting but that it may fall into the Hands of some, who are Astronomically inclined, it has gained a Place here.

The R U L E.

From the Sum of the three Angles, subtract a Semi-circle, or 180 Degrees, and multiply the Remainder by the superficial Content of the Sphere or Globe: Divide the Product by 720, the Quotient is the Area of the Triangle.

Example. The Angle P 135, Z 45, A 32, their Sum 212 — 180 = 32, and suppose the Diameter of a Globe 60 Inches, its Circumference 188.9724, the superficial Content 11309.724×32 , and divided by 720 = 502.654 Square Inches, which you may bring into Feet, &c. as has been taught in Page 52.

20. To gauge IRREGULAR Figures.

See Plate I. Fig. 22.

It often happens that the Gauger meets with Figures whose Content cannot be found by any of the Rules already laid down; in such Cases the following Method must be used.

Let Fig. 22. Plate I. represent an irregular Figure whose Area is required. First, in some Part of its Curvature, which appears circular, I draw the two Lines, each marked 1, and raising Perpendiculars from the Middle of these two Lines, I find them meet at A; therefore on A, as a Center, I try how far that Segment of a Circle reaches, and find it to reach from B to C. Secondly, by means of the Lines marked 2, I find D, the Center of the Segment BE; and Thirdly, by means of the Lines marked 3, I find the Center of the Segment EC. Thus is the Figure divided into THREE circular Segments, and ONE Triangle, which may be gauged by the Methods already delivered in this Book: And the Areas of those three Segments, and that of the Triangle ADDED together, will give the true Content of the whole Figure.

C H A P. XXI.

Of gauging Solids.

Shewing how to gauge all Sorts of SOLIDS.

A Solid, what.

AS Superficies are comprehended under *Length* and *Breadth*; so are Solids, under *Length*, *Breadth* and *Depth*.

Of the Cube.

I. To gauge a CUBE.

See Plate II. Fig. 4.

Definition.

Definition. A Cube (or Die) is a Solid, having six equal Sides.

The R U L E.

The Rule for gauging a Cube.

Take your Dimensions in Inches, and multiply the Length, Breadth, and Depth one into another; this will give you the Solidity in cubic Inches; which multiply or divide by the proper Factor or Divisors in Page 51, and it will give you the Content in Feet, Ale, Wine, Malt, &c. respectively.

An Example.

Example. Let the Side of the Cube be 30 Inches; I demand the Content in Feet, Ale Gallons, Wine Gallons, Malt Bushels, and in Tallow Pounds gros, &c ?

Operation,

Feet:

$$AB = 30$$

$$BC = 30$$

$$\text{Area} = 900$$

$$CD = 30$$

Feet.

$$1728) 27000.00 \text{ (15.62 Feet.)}$$

Ale.

$$282) 27000.00 \text{ (95.74 Ale Gallons.)}$$

Wine.

$$231) 27000.00 \text{ (116.88 Wine Gallons.)}$$

Malt.

$$2150.4) 27000.000 \text{ (12.55 Malt Bushels.)}$$

Tallow gros.

$$30.28) 27000.0000 \text{ (891.67 Pounds of Tallow gros.)}$$

Tallow net.

$$31.4) 27000.000 \text{ (859.87 Pounds of Tallow net.)}$$

Hard Soap.

$$28.0) 27000.0000 \text{ (964.24 Pounds of Hard Soap.)}$$

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25.67	27000.0000	(1051.81 Pounds of green soft Soap.	Green soft Soap.
25.56	27000.0000	(8056.33 Pounds of White soft Soap.	White soft Soap.
34.8	27000.0000	(775.862 Pounds of green or raw Starch.	Green Starch.

By the Sliding Rule on C. and D.

By the Sliding Rule.

D	C	D	C
41.6	30	30	15.62 Feet.
16.79	30	30	95.74 Ale Gallons.
15.19	30	30	116.88 Wine Gallons.
46.36	30	30	12.55 Malt Bushels.
As { 5.5	is { 30	So { 30	891.67 Tallow Pounds gross.
5.6	to { 30	is { 30	859.87 Pounds of Tallow net.
5.2	to { 30	is { 30	994.84 Pounds of Hard Soap.
5.06	to { 30	is { 30	1051.81 Pounds of green Soft Soap.
5.05	to { 30	is { 30	1056.33 Pounds of white Soft Soap.
5.9	to { 30	is { 30	775.862 lb. of green or raw Starch.
Gauge Point	Side	Side	Content

Note, The first Terms under D, are the Gauge Points, A Note. for Squares, taken out of the Table on Page 51, the second and third Terms are the Dimensions of the Cube.

2. To gauge a PARALLELOPIPEDON.

See Plate II. Fig. 5.

Of the ParallelopiPEDON.

Definition. A ParallelopiPEDON is a solid Figure contained under six Parallelograms, the opposite Sides of which are parallel and equal.

The R U L E.

Multiply the Length, Breadth, and Depth into one another, The Rule for (as before in the Cube) and the Product is the Solidity in Inches; which divide by the proper Divisors, you would have its Content in, and you will have your desire.

Example. Let the Length AB = 81 Inches, the Breadth AG = 25, and the Depth GF = 26; what is the Content in Feet, Ale, Wine, Malt, and Tallow Pounds net, &c?

Operation.

How to gauge Solids.

Operation.

$$A B = 81$$

$$A G = 25$$

$$\begin{array}{r} 405 \\ 162 \\ \hline \end{array}$$

$$\text{Area} = 2025$$

$$G F = 26$$

$$\begin{array}{r} 12150 \\ 4050 \\ \hline \end{array}$$

Feet.	1728)	52650.00	(30.46 Feet.
Ale.	282)	52650.0	(186.7 Ale Gallons.
Wine.	231)	52650.00	(227.92 Wine Gallons.
Malt.	2150.4)	52650.000	(24.48 Malt Bushels.
Tallow net.	31.4)	52650.000	(1676.75 Pounds of Tallow net.
Tallow gross.	30.28)	52650.0000	(17.38. 77 Pounds of Tallow gross.
Hard Soap.	28.0)	52650.0000	(1880.35 Pounds of Hard Soap.
Green Soft Soap.	25.67)	52650.0000	(2051.03 Pounds of green Soft Soap.
White Soft Soap.	25.56)	52650.0000	(2059.85 Pounds of white Soft Soap.
Starch.	34.8)	52650.00000	(1512.64 Pounds of green or raw Starch

By the Sliding
Rule.
A Geometrical
Mean.

By the Sliding Rule.

Before this can be performed, you must find a *Geometrical mean Proportional* between the Length $A B$ 81 and the Breadth $A G$ 25, as has been taught in Page 44, on the Lines C and D , thus :

D	C	C	D
As 81 is to 81	so is	25 to 45	the Mean.
The Length		The Breadth	

Now

Now for the Content say :

D	C	D	C	
41.6	26	45		30.46 Feet.
16.79	26	45		186.7 Ale Gallons.
15.19	26	45		227.92 Wine Gallons.
46.37	26	45		24.48 Malt Bushels.
As 5.6	is 26	so 45	to	1676.73 Tallow Pounds net.
5.5	to 26	is 45		1738.77 Pounds of Tallow gross.
5.2	26	45		1880.35 Pounds of Hard Soap.
5.06	26	45		2051.03 Pounds of green Soft Soap.
5.05	26	45		2059.85 Pounds of white Soft Soap.
5.9	26	45		1512.64 Pounds of green or raw Starch.
Gauge Point	Depth	Mean	Content	

3. To gauge a PRISM*.

Of the Prism.

See Plate II. Fig. 6.

Definition. A Prism is a Solid Figure contained under several Planes, whose Bases are regular Polygons (most commonly triangular,) equal, parallel, and a-like situated.

The RULE.

The Rule.

Find the Area of the triangular End ABD (as was taught in Page 60,) which multiplied by the Length DF, gives you the Solidity in Inches; which reduce into Feet, Ale, Wine, Malt, &c.

Example. Admit AB be 63, CD 14, and EF 80 Inches; An Example. I demand the Content as above-mentioned.

Operation.

The Operation.

$$\begin{aligned} AB &= 63 \\ \text{Half of } CD &= 7 \end{aligned}$$

$$\begin{aligned} \text{Area} &= 441 \\ DF &= 80 \end{aligned}$$

$$1728) 35280.00 \text{ (20.41 Feet.}$$

Feet.

$$282) 35280.00 \text{ (125.10 Ale Gallons.}$$

Ale.

$$231) 35280.00 \text{ (152.72 Wine Gallons.}$$

Wine.

$$2150.4) 35280.0000 \text{ (16.406 Malt Bushels.}$$

Malt.

$$28.0) 35280.0000 \text{ (1260.0 Hard Soap.}$$

Hard Soap.

30.28)

* Note, That Pyramids, Prisms, and Parallelopipedons upon the same Base and Aititude are as one, one and a half, and three: That is, if the Pyramid be 1, the Prism is 1 and a half, and the Parallelopipedon is 3.

Tallow gross.	30.28	35280.0000	(1165.12 Pounds of Tallow gross.
Tallow net.	31.4	35280.000	(1123.56 Pounds of Tallow net.
Green Soft Soap.	25.67	35280.0000	(1374.36 Pounds of green Soft Soap.
White Soft Soap.	25.56	35280.0000	(1380.28 Pounds of white Soft Soap.
Green Starch.	34.8	35280.00000	(1010.9194 Pounds of green or raw Starch.

On the Sliding Rule on the Lines C and D.
By the Sliding Rule. You must first find a Geometrical mean Proportional between the Base AB 63, and $\frac{1}{2}$ the Perpendicular CD 7, thus:

D C C D
As 63 is to 63 so is 7 to 21 the mean Proportional.
Base Base $\frac{1}{2}$ Perpend.

Now say for the Content,

D	C	D	C
41.6	80	21	20.41 Feet.
16.79	80	21	125.10 Ale Gallons.
15.19	80	21	152.72 Wine Gallons.
46.37	80	21	16.406 Malt Bushels.
As 5.2	is 80	so 21	to 1266.0 Hard Soap.
5.5	to 80	is 21	to 1165.12 Pounds of Tallow gross.
5.6	80	21	1123.56 Pounds of Tallow net.
5.06	80	21	1374.36 Pounds of green Soft Soap.
5.05	80	21	1380.28 Pounds of white Soft Soap.
5.9	80	21	1010.9195 Pounds of green or raw
Gauge Point	Depth	Mean	Content [Starch,

Of the Cylinder

4. To gauge a CYLINDER *.

See Plate II. Fig. 7.

Definition. A Cylinder is a Figure like the Rolling-Stone used in Gardens, it is in all Places of an equal Diameter; and in Gauging, all Casks are generally reduced to this Form, before their Contents are found.

The R U L E.

The Rule. Multiply the Square of the Diameter by the Depth (or Length, which you please to term it,) and divide that Product by the proper Divisors for Circles, as you have them in the Table on Page 51, and the Quotient is the Content.

Or,

Multiply the Product by its proper Factors, which gives you the same Content.

Example.

* A Cylinder is a solid Body made by the Rotation of a rectangled Parallelogram round one of its Sides.

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Example. Let the Diameter A B be 56.5 Inches, and the An Example.
Length 96; what's the Content in Feet, Ale, Wine, Malt, &c.

Operation.

The Operation,

$$\begin{array}{r} AB = 56.5 \\ 56.5 \\ \hline 2825 \\ 3390 \\ 2825 \\ \hline 3192.25 \\ \text{Length} = 96 \\ \hline 1915350 \\ 2873025 \\ \hline \end{array}$$

2200.158)306456.00000(139.29 Feet.

Feet.

359.05)306456.0000(853.52 Ale Gallons,

Ale.

294.118)306456.00000(1041.94 Wine Gallons.

Wine.

2738.)306456.00(111.92 Malt Bushels.

Malt.

32.68)306456.0000(9377.47 Green Soap.

Green Soft Soap.

38.55)306456.0000(7949.57 Pounds of Tallow gross.

Tallow gross.

39.98)306456.0000(7665.23 Pounds of Tallow net.

Tallow net.

35.65)306456.0000(8567.36 Pounds of Hard Soap.

Hard Soap.

32.54)306456.0000(9417.82 Pounds of white soft Soap.

White Soft Soap.

44.32)306456.00000(6914.62 Pounds of green or raw

(Starch. Green Starch.

By the Sliding Rule on the Lines C and D.

By the Sliding Rule.

As the Gauge Point on D is the Depth on C, so is the Diameter on D to the Content on C.

D	C	D	C
As { 46.9 } is { 96 } is { 56.5 } to { 139.29 Feet.			
{ 18.94 } is { 96 } is { 56.5 } to { 853.52 Ale Gallons.			
{ 17.14 } is { 96 } is { 36.5 } to { 1041.94 Wine Gallons.			
{ 52.32 } is { 96 } is { 56.5 } to { 111.92 Malt Bushels.			
{ 5.7 } is { 96 } is { 56.5 } to { 9377.47 Green Soft Soap.			
Gauge Point	Depth	Diam.	Content
PART I.		H	As

D	C	D	C
6.2	96	56.5	7949.57 Pounds of Tallow gross.
6.3	96	56.5	7665.23 Pounds of Tallow net.
5.9	96	56.5	8867.36 Pounds of Hard Soap.
5.7	96	56.5	9417.82 Pounds of subtile Soft Soap.
6.66	96	56.5	6914.62 Pounds of green Starch.
G. Point	Depth	Diameter	Content

Having only the Circumference and Length, to find the Contents of a Cylinder.

An Example.

Note. By help of the Table in Page 60, the Content of the Cylinder may be found by having the Circumference and Length only. As for

Example. The Diameter of this Cylinder being 56.5, the Circumference is 177.499835 : Then, for the Solidity in Feet by the Sliding Rule on the Lines A and B, say,

An excellent Way to measure round Timber truly, with once setting the Rule.

As 147.36 is to 177.5 so is 96 to 115.63
Length

Say again,

As 147.36 is to 177.5 so is 115.63 to 139.29 Feet.

Of the Cone.

5. To gauge a Right Cone*.

See Plate II. Fig. 8.

Definition.

Definition. A Right Cone is a solid Figure formed by the Rotation of a right-angled Triangle round one of its Sides, and terminates in a Point at the Top, called its Vertex; a Cone is equal to one-third of its circumscribing Cylinder.

A Rule for gauging a Cone.

The RULE.

Square the Diameter AC, and multiply that by one-third of the Altitude BD; divide this last Product by the proper Divisors for Circles, or multiply it by the proper Factors, and you have the Content in Feet, Als, &c.

Another Rule.

Or, You may multiply the Square of the Diameter by the whole Height, and divide by the Triple of the circular Divisors, which gives the same Answer.

Plate II. Fig. 8.

Example. Let the Diameter of the Base AC be 56.5 Inches, and the Height BD 96; I demand the Content in Feet, Als, Wins, Malt Bushels, and Pounds of Soft Soap, &c.

Operation.

* A Cone may be conceived as a Pyramid of an infinite Number of Sides. And the Surface of a Right Cone is equal to a Triangle whose Height is the Side of the Cone, and the Base equal to the Circumference of the Base of the Cone. Finding the Area of this, is only used in Painters Work.

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Operation.

The Operation.

$$AC = 56.5$$

$$56.5$$

$$2825$$

$$3390$$

$$2825$$

$$\frac{1}{4} \text{ of the Height } \left\{ \begin{array}{l} 3192.23 \\ BD = 32 \end{array} \right.$$

$$698450$$

$$952675$$

$$2200.158 \left(102152.00000 \right) (46.43 \text{ Feet.})$$

$$359.09 \left(102153.0000 \right) (284.51 \text{ Ale Gallons.})$$

$$294.118 \left(102152.00000 \right) (347.32 \text{ Wine Gallons.})$$

$$2738. \left(102152.00 \right) (37.31 \text{ Malt Bushels.})$$

$$32.54 \left(102152.0000 \right) (3139.28 \text{ White Soft Soap.})$$

$$38.55 \left(102152.0000 \right) (2649.85 \text{ Pounds of Tallow gross.})$$

$$39.98 \left(102152.0000 \right) (2555.08 \text{ Pounds of Tallow net.})$$

$$35.65 \left(102152.0000 \right) (2955.78 \text{ Pounds of Hard Soap.})$$

$$32.68 \left(102152.0000 \right) (3125.82 \text{ Pounds of green Soft Soap.})$$

$$44.32 \left(102152.00000 \right) (2304.873 \text{ Pounds of green or raw Starch.})$$

By the Sliding Rule on the Lines C and D.

By the Sliding Rule.

Set the Gauge Point on the Line D to $\frac{1}{4}$ of the Altitude on C, and against the Diameter on D is the Content on C.

D	C	D	C
46.9	32	56.5	46.43 Feet.
18.94	32	56.5	284.51 Ale Gallons.
17.14	32	56.5	347.32 Wine Gallons.
52.32	32	56.5	37.31 Malt Bushels.
5.7	32	56.5	3139.28 Pounds of white Soft Soap.
6.2	32	56.5	2649.85 Pounds of Tallow gross.
6.3	32	56.5	2555.08 Pounds of Tallow net.
5.9	32	56.5	2955.78 Pounds of Hard Soap.
5.72	32	56.5	3125.82 Pounds of green Soft Soap.
6.66	32	56.5	2304.873 Pounds of green or raw Starch.
Gauge Point $\frac{1}{4}$ Height	Diameter	Content	

H 2

Observe.

How to gauge Solids. Part I.

Observe. In the Cylinder and Cone I have put the Dimensions the same; so that you see the Cone holds just one-third Part of the Cylinder.

Of the Frustum of a Cone.

6. To gauge the Frustum of a Cone.

See Plate II. Fig. 8.

Definition.

Definition. A Frustum is that Part of the Cone towards the Base when the Top is cut off; so in the Figure before us, if we cut the Cone off by the Line EF, I say the Part AEFC is a Frustum, and EBF remains a Cone still, though of a smaller Size.

The RULE.

A Rule for gauging the Frustum of a Cone.

To three times the Product of the two Diameters, add the Square of their Difference; multiply this Sum by the Depth, and divide by 1077.15 (that is, 3 times 359.05) for Ale, by 882.354 for Wine, by 8214 for Malt Bushels, and by 132.96 for Pounds of green Starch, &c.

Or,

Another Rule.

Find the Area of both Ends in Inches, and between them find a Geometrical Mean: The Sum of these three multiplied by $\frac{1}{3}$ the Altitude of the Frustum gives the Content, which may be reduced into Feet, Gallons, &c.

An Example.

Example. Let the bottom Diameter be 56.5 Inches, and the Top 19, and the Height 62; I demand the Content in Feet, Ale Gallons, Wine Gallons, Malt Bushels, and Pounds of raw Starch, &c?

The Operation.

Operation.

$$AC = 56.5$$

$$EF = 19$$

$$AC = 56.5$$

$$EF = 19$$

$$5080$$

$$565$$

$$\text{Rectangle } 1073.5$$

$$\text{Multiply by } 3$$

$$\text{add } \begin{cases} 3220.5 \\ 1406.25 \end{cases}$$

$$\text{Depth } \begin{matrix} 4626.75 \\ 62 \end{matrix}$$

$$925350$$

$$2776050$$

$$\text{Subtract } 37.5 \text{ Difference.}$$

$$37.5 \times$$

$$1875$$

$$2625$$

$$1125$$

$$1406.25$$

Feet.

$$6600.474) 286858.50000 (43.46 \text{ Feet.}$$

Ale.

$$1077.15) 286858.5000 (266.31 \text{ Ale Gallons.}$$

Wine.

$$882.354) 286858.5000 (325.1 \text{ Wine Gallons.}$$

Malt.

$$8214) 286858.50 (3492 \text{ Malt Bushels.}$$

$$132.96$$

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132.96)	286858.30000	(2157.479 Green or raw Starch.	Green Starch.
115.65)	286858.50000	(2480.41 Pounds of Tallow gross.	Tallow gross.
119.94)	286858.50000	(2391.68 Pounds of Tallow net.	Tallow net.
103.68)	286858.50000	(2766.76 Pounds of Hard Soap.	Hard Soap.
98.04)	286858.50000	(2925.93 Pounds of green Soft Soap.	Green Soft Soap.
97.62)	286858.50000	(2938.52 Pounds of white Soft Soap.	White Soft Soap.

N. B. If you take the Square Roots of the Divisors for Circles, they will be Gauge Points, by which, and the three Diameters, you may find Areas, then the Sum of those three Areas multiplied by the whole Depth, will produce the true Content. For the Gauge Points, see Page 51.

By the Sliding Rule.

By the Sliding Rule.

First, According to the Directions given in Page 43, find a mean Diameter between the Top and Bottom Diameters on the Lines C and D, thus:

D C D C

As 56.5 is to 56.5, so is 19 to 32.7 the mean Diameter.

Secondly, To these three Diameters find Areas by the Sliding Rule, as is taught in Page 33. For the Areas in Feet, the Work will stand thus: D C

D C
As 46.9 is to 1, so is { 19. } to { .164 } Areas.
 { 32.7 } to { .485 }
 { 56.5 } to { 1.45 }

Sum 2.099

$\frac{1}{3}$ of the Height 20.7 Inches.

14693

4198

Content of the Frustum 43.4493 Feet.

Or,

Thus by the Rule on the Lines A and B.

B A B A

As 1 is to 2.1, so is 20.7 to 434 Feet.

Unity Area $\frac{1}{3}$ Height

For Ale or Beer Gallons.

D C

D C
As 18.95 is to 1, so is { 19. } to { 1.00 } Areas in Ale Gall.
Gauge Pt Unity { 32.7 } to { 3.00 }
 { 56.5 } to { 8.00 }

Ale and Beer Gallons.

Diam.

The Sum of the Areas 12.00

B A B A

Then as 1 is to 12.0, so is 20.7 to 246.3 Content in Ale Gall.

Unity Area $\frac{1}{3}$ Height

H 3

For

How to gauge Solids. Part I.

For Wine Gallons.

$$\begin{array}{ccc} \text{D} & \text{C} & \text{D} \\ \text{As } 17.14 \text{ is to } 1, \text{ so is } \left\{ \begin{array}{l} 19. \\ 32.7 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} 1.23 \\ 3.66 \end{array} \right\} \end{array} \quad \text{Areas in Wine Gallons.}$$

Diam.

The Sum of the Areas 15.74

$$\begin{array}{ccc} \text{B} & \text{A} & \text{B} \\ \text{Then say, As } 1 \text{ is to } 15.74, \text{ so is } 20.7 \text{ to } 325.1 \end{array} \quad \text{Content in Wine Gallons.}$$

Unity Area $\frac{1}{2}$ Height

For Malt Bushels.

$$\begin{array}{ccc} \text{D} & \text{C} & \text{D} \\ \text{As } 52.32 \text{ is to } 1, \text{ so is } \left\{ \begin{array}{l} 19. \\ 32.7 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} .13 \\ .39 \end{array} \right\} \end{array} \quad \text{Areas in Malt Bushels.}$$

Diam.

The Sum of the Areas 1.69

$$\begin{array}{ccc} \text{B} & \text{A} & \text{B} \\ \text{Then say, As } 1 \text{ is to } 1.69, \text{ so is } 20.7 \text{ to } 34.92, \end{array} \quad \text{the Content in Malt Bushels.}$$

Unity Area $\frac{1}{2}$ Height

For Pounds of Tallow gross.

$$\begin{array}{ccc} \text{D} & \text{C} & \text{D} \\ \text{As } 6.21 \text{ is to } 1, \text{ so is } \left\{ \begin{array}{l} 19. \\ 32.7 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} 9.37 \\ 27.71 \end{array} \right\} \end{array} \quad \text{Areas in Pounds of Tallow gross.}$$

Diam.

The Sum of the Areas 119.82

$$\begin{array}{ccc} \text{B} & \text{A} & \text{B} \\ \text{Then say, As } 1 \text{ is to } 119.82, \text{ so is } 20.7 \text{ to } 2480.4 \end{array} \quad \text{Cont. in Pounds Tallow gross}$$

For Pounds of Tallow net.

$$\begin{array}{ccc} \text{D} & \text{C} & \text{D} \\ \text{As } 6.3 \text{ is to } 1, \text{ so is } \left\{ \begin{array}{l} 19. \\ 32.7 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} 9.4 \\ 26.74 \end{array} \right\} \end{array} \quad \text{Areas in Pounds of Tallow net.}$$

Diam.

The Sum of the Areas 115.62 which multiply by 20.7, being $\frac{1}{3}$ of [the Length, gives the Cont.

For Pounds of Hard Soap.

$$\begin{array}{ccc} \text{D} & \text{C} & \text{D} \\ \text{As } 5.98 \text{ is to } 1, \text{ so is } \left\{ \begin{array}{l} 19. \\ 32.7 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} 10.44 \\ 30.94 \end{array} \right\} \end{array} \quad \text{Areas in Pounds of Hard Soap.}$$

Diam.

The Sum of the Areas 133.74 which multiply by 20.7, gives the [Content.

For

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For Pounds of green Soft Soap.

$$\begin{array}{rcccl} & D & C & & \\ \text{As } 57.2 \text{ is to } 1, \text{ so is } & \left\{ \begin{array}{l} 19. \\ 32.7 \\ 56.5 \end{array} \right\} & \text{to } & \left\{ \begin{array}{l} 11.04 \\ 32.72 \\ 97.64 \end{array} \right\} & \text{Areas in Pounds of green Soft Soap.} \\ \text{Gauge Pt. Unity} & \text{Diam.} & & & \end{array}$$

The Sum of the Areas 141.40 which multiply by 20.7, gives the [Content.]

For Pounds of white Soft Soap.

$$\begin{array}{rcccl} & D & C & & \\ \text{As } 5.7 \text{ is to } 1, \text{ so is } & \left\{ \begin{array}{l} 19. \\ 32.7 \\ 56.5 \end{array} \right\} & \text{to } & \left\{ \begin{array}{l} 11.09 \\ 32.86 \\ 98.10 \end{array} \right\} & \text{Areas in Pounds of white Soft Soap.} \\ \text{Gauge Pt. Unity} & \text{Diam.} & & & \end{array}$$

The Sum of the Areas 142.05 which multiply by 20.7, gives the [Content.]
Note, The Height of the Frustum is 62 Inches, one Third of which is 20.7.

For Starch by the Rule, the Work stands thus: Starch.

$$\begin{array}{rcccl} & D & C & & \\ \text{As } 66.6 \text{ is to } 1, \text{ so is } & \left\{ \begin{array}{l} 19. \\ 32.7 \\ 56.5 \end{array} \right\} & \text{to } & \left\{ \begin{array}{l} 8.2 \\ 24.4 \\ 72.1 \end{array} \right\} & \text{Areas.} \\ \text{Gauge Pt. Unity} & \text{Diam.} & & & \end{array}$$

The Sum of the Areas 104.7

Say again,

$$\begin{array}{rcccl} & B & A & B & A \\ \text{As } 1 \text{ is to } 89.3, \text{ so is } 20.7 & \text{to } & 2167.21 & \text{Pounds of Starch.} & \text{Starch.} \end{array}$$

To gauge an upright Elliptic Cone, and a Frustum of an Elliptic Cone.

If you have an Elliptic Cone, find its Area as you did that of an Ellipsis, which multiplied by one Third of its Altitude, gives the Content. To gauge an Elliptic Cone.

An Elliptic Frustum is gauged all one as the Frustum of a circular Cone; only have regard to find the Area, as you were taught in the Ellipsis, and it is done. An Elliptic Frustum.

Of gauging a PYRAMID.

A Pyramid being one Third of a Prism of the same Height and Base, and being so nearly related to a Cone, I shall omit giving an Example; and only tell you that it may have for its Base a Square, or any regular Polygon, and terminating in a Point at the Top. To gauge a Pyramid.

The RULE.

Find the Area of the Base (according to what Figure it represents) which multiply into one Third of its Height, and you have

H 4

The Rule.

its

its Solidity in the same Measure the Dimensions were taken in, which you may reduce into Feet, Gallons, Bushels, Pounds, &c. as has been taught above. The Frustum of a Pyramid may be gauged as the Frustum of a Cone, only having regard to the Area, that you find them as Squares, or regular Polygons, and not as Circles.

A Parabolic Conoid.

7. To gauge a Parabolic Conoid.

See Plate II. Fig. 9.

To find the Divisors for a Parabolic Conoid,

Definition. A Parabolic Conoid is a Solid formed by the Rotation of a Semi-Parabola about its Axis. See Page 88. It is equal to $\frac{1}{2}$ of its circumscribing Cylinder, having the same Base and Altitude. Therefore the Divisors, &c. being doubled, will be the Divisors for a Parabolic Conoid.

Rule for gauging a Parabolic Conoid.

Multiply the Square of the Diameter of the Base by the Height, and then dividing the Product by the proper Divisors, (that is, by the double of the Divisors for Circles) will give the Content.

Or,

Multiply the Square of the Base by half the Height, and divide by the proper Divisors for a Circle, will give the same Content.

An Example.

Example. Let the Diameter A C be 106 Inches, and the Height B D 96 Inches; what is the Content in Feet, Ale, Wine, Malt, Bushels, and Tallow Pounds, &c?

Operation.

Operation.

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

$$A C = 106$$

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$$\text{Square of } A C = 11236$$

$$\text{Height } A D = 96$$

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$$\text{Height } A D = 96$$

$$\text{Height } A D = 96$$

Feet,

Ale,

Wine,

Malt,

4400.216) 1078656.00000 (245.13 Feet.

588.236) 1078656.00000 (1833.71 Wine Gallons.

5476) 1078656.00 (196.96 Malt Bushels.

Ch. XXI. How to gauge Solids.

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77.1)	1078656.000	(13990.35	Tallow Pounds gros.	Tallow gros.
79.96)	1078656.000	(13489.9	Pounds of Tallow net.	Tallow net.
79.12)	1078656.000	(13633.1	Pounds of Hard Soap.	Hard Soap.
65.36)	1078656.000	(16503.3	Pounds of green Soft Soap.	GreenSoftSoap.
65.08)	1078656.000	(16574.3	Pounds of white Soft Soap.	WhiteSoftSoap.
88.64)	1078656.000	(1216.895	Pounds of green Starch.	Green Starch.

If you would have Gauge Points and Factors to the Parabolic Conoids, see CHAP. XIX.

By the Sliding Rule on the Lines C and D.
Set the Gauge Points on D to Half the Height on C, and Rule.
against the Diameter A.C on D is the Content on C.

Operations.		Operations.	
D	C	D	C
46.9	48	106	245.13 Feet.
18.94	48	106	1502.09 Ale Gallons.
17.14	48	106	1833.71 Wine Gallons.
52.32	48	106	196.96 Malt Bushels.
6.2	48	106	13990.35 Pounds of Tallow gros.
6.3	48	106	13489.9 Pounds of Tallow net.
5.98	48	106	13633.1 Pounds of Hard Soap.
5.72	48	106	16503.3 Pounds of green Soft Soap.
5.7	48	106	16574.3 Pounds of white Soft Soap.
6.56	48	106	1216.895 Pounds of green Starch.
Gauge Point	Height	Diam.	Content

8. To gauge an Hyperbolic Conoid.

An Hyperbolic Conoid.

See Plate II. Fig. 10.

Definition. An Hyperbolic Conoid, is a Solid formed by the Rotation of a Semi-Hyperbola about its Axis; it is less than the Parabola, and the Proportion to the Cylinder is as 5 to 12, or as 1 to 2.4; though it is evident, that as the transverse Axis, and intercepted Diameter differ, so will the Solidity of the encompassing Cylinder also differ in Proportions.

Therefore the Divisors are found thus, on the Lines A and B.

1. For

1. For Feet by the Sliding Rule.

	B	A
1 For Feet _____	2200.158	5280.3792
2 For Ale Gallons _____	359.05	861.72
3 For Wine Gallons _____	294.118	705.8832
4 For Malt Bushels _____	2738.	6571.2
5 For Tallow Pounds gross _____	38.55	92.52
6 For Tallow Pounds net _____	39.98	95.952
7 For Hard Soap _____	35.65	82.944
8 For green Soft Soap _____	32.65	78.432
9 For white Soft Soap _____	32.54	78.096
10 For green Starch _____	44.32	106.368

As 1 upon B, is to 2.4 upon A, so is

Divisors.

Factors and Gauge Points. If you would work by Multiplication when you gauge an Hyperbolic Conoid, you must find Factors or Multipliers, as has been taught in Page 52, and Gauge Points as on Page 49, so that Factors and Gauge Points for an Hyperbolic Conoid stand thus :

	Factors.	Gauge Pts.
1 Feet _____	.0000189381	72.66
2 Ale Gallons _____	.00116046	29.35
3 Wine Gallons _____	.00141668	26.56
4 Malt Bushels _____	.00015218	81.06
5 Tallow Pounds gross _____	.01080847	9.62
6 Tallow Pounds net _____	.010421773	9.79
7 Hard Soap _____	.012056327	9.107
8 Green Soft Soap _____	.012749898	8.85
9 White Soft Soap _____	.012804753	8.83
10 Green or raw Starch _____	.00940132	10.31

The R U L E.

The Rule for gauging an Hyperbolic Conoid. Multiply the Square of the Diameter A C by the Height B D, and divide that Product by the Divisors above.

Or,

Another Rule. Multiply by the Factors above: And either of these give the Content.

An Example. Example, Let A C be 112, and B D 83 Inches; what is the Content in Feet, Ale, Wine, Malt, &c?

Operation.

$$AC = \frac{113}{113}$$

$$\begin{array}{r} 339 \\ 113 \\ \hline 113 \\ \hline \text{Square of } AC = 12769 \\ BD = 83 \\ \hline 38307 \\ \hline 102152 \end{array}$$

$$52803.792) 1059827.000000 (200.72 \text{ Feet.}$$

Feet.

$$861.72) 1059827.000000 (1229.897 \text{ Ale Gallons. Ale.}$$

$$705.8832) 1059827.000000 (1501.42 \text{ Wine Gallons. Wine:}$$

$$6571.2) 1059827.000 (161.29 \text{ Malt Bushels. Malt.}$$

$$92.52) 1059827.0000 (11455.11 \text{ Pounds of Tallow gross. Tallow gross.}$$

$$95.932) 1059827.00000 (11045.38 \text{ Pounds of Tallow net. Tallow net.}$$

$$8294.4) 1059827.00000 (12777.62 \text{ Pounds of Hard Soap. Hard Soap.}$$

$$78.432) 1059827.00000 (13521.68 \text{ Pounds of Green Soft Soap. Green Soft Soap.}$$

$$78.096) 1059827.00000 (13570.82 \text{ Pounds of White Soft Soap. White Soft Soap.}$$

$$106.361) 1059827.000000 (9963.776 \text{ Pounds of Green Starch. Green Starch.}$$

By the Sliding Rules on the Lines C and D.

By the Sliding Rule.

D	C	D	C
72.66	83	113	200.72 Feet.
29.35	83	113	1229.9 Ale Gallons.
26.56	83	113	1501.4 Wine Gallons.
81.06	83	113	161.3 Malt Bushels.
9.79	83	113	11045.4 Pounds of Tallow net.
Gauge Pt.	Height	Diam.	

9. To gauge a Parabolic Spindle.

See Plate II. Fig. 11.

Of the Parabolic Spindle.

Definition. A Parabolic Spindle is a solid Body made by the Definition.
Rotation of a Semi-parabola about its Ordinate, which is equal
to $\frac{2}{3}$ of its circumscribing Cylinder : Or, As 1 to 1.875.

For,

How to gauge Solids. Part I.

For,

As 8 is to 15, so is 1 to 1.875.

Now if you multiply the circular Divisors by 1.875, the Products will be the Divisors for a Parabolic Spindle.

A Table for a Parabolic Spindle.

A TABLE of Divisors, Multipliers and Gauge Points, for a Parabolic Spindle.

	Divisors.	Factors.	G. Pts.
1 Feet	4125.29625	.000242406	64.228
2 Ale Gallons	673.21875	.0014854	25.945
3 Wine Gallons	551.47125	.0018133	23.483
4 Malt Bushels	5133.75	.0001947894	71.65
5 Tallow Pounds gross	72.28125	.0138348	8.5
6 Tallow Pounds net	74.9625	.01334	8.65
7 Pounds Hard Soap	64.8	.015432	8.04
8 Pounds green Soft Soap	61.21875	.0163348	7.824
9 Pounds white Soft Soap	61.0125	.01639	7.81
10 Green or Raw Starch.	83.1	.012033	9.11

The Rule for gauging a Parabolic Spindle.

The RULE.

Multiply the Square of AC by BD, and divide the Product by the proper Divisors.

Or,

Multiply by the proper Factors taken out of the Table above; either of which will give the Content required.

An Example.

Example. Admit AC be 40, and BD 70 Inches; I demand the Content in Feet, Ale, Wine, Malt Bushels, and Pounds of Hard Soap?

The Operation.

Operation.

$$AC = 40$$

$$40$$

$$AC \text{ squared} = 1600$$

$$BD = 70$$

Feet.

$$4125.29625 \cdot 112000.0000000 (27.15 \text{ Feet.})$$

Ale.

$$673.21875 \cdot 112000.0000000 (166.364 \text{ Ale Gallons.})$$

Wine.

$$551.47125 \cdot 12000.0000000 (203.09 \text{ Wine Gallons.})$$

Malt.

$$5133.75 \cdot 112000.0000 (21.81 \text{ Malt Bushels.})$$

Hard Soap.

$$64.8 \cdot 112000.000 (1728.39 \text{ Hard Soap.})$$

By

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By the Sliding Rule on the Lines C and D.

By the Sliding Rule.

D	C	D	C
64.2	70	40	27.1
25.9	70	40	166.4
23.5	70	40	203.1
71.65	70	40	21.8
8.04	70	40	1728.4

10. To gauge a Globe or Sphere*.

See Plate II. Fig. 12.

Definition. A *Globe*, or *Sphere*, is a round solid Body, every Part of whose Surface is equally distant from a Point within it, called its *Center*; and it may be conceived to be formed by the Revolution of a *Semi-circle* round its *Diameter*.

It is $\frac{2}{3}$ of the *Cylinder* that circumscribes it, or as 1 is to 1.5, so is the *Divisor* for the *Cylinder* to the *Divisor* for the *Sphere*.

Example. For the *Divisor* for a *Globe* by the *Single Rule* of Three Direct, for Feet say,

As 1 is to 1.5 so is 2200.158

1.5

11000790

2200158

3300.2370 (57.44 the Square Root or Gauge Point.)

25

107) 800

249

1144) 5123

4576

11484) 54770

45936

Remains 8834

After the same Manner are the other *Divisors* and *Gauge Points* found, as you see done by the *Sliding Rule* below: For, because the *first Term* is *Unity*, or 1, there is no more to do, than to multiply the *Divisor* for the *Cylinder* by 1.5, and the *Product* is the *Divisor* for the *Globe*, whose *Square Root* is the *Gauge Point* on the *Sliding Rule*.

Thus,

* In Page 47, it is shewn that the Area of a Circle, whose Diameter is one Inch, is .785398 Inches, two Thirds of which .523598 is the Content of a Sphere whose Diameter is Unity or 1.

By the Sliding
Rule.

Thus, by the Sliding Rule on the Lines A and B.

	A	B	Gauge Pt.
Feet _____	2200.158	3300.237	57.44
Ale _____	359.05	538.575	23.2
Wine _____	294.118	441.177	21.0
Malt _____	2738.	4107.	64.1
Tallow Pounds gros	38.55	57.825	7.6
Tallow net _____	39.98	59.97	7.74
Hard Soap _____	34.56	51.84	7.2
Green Soap _____	32.65	48.975	6.99
Soft Soap _____	32.54	48.81	6.98
Green or raw Starch	44.32	66.48	8.15

A Note.

Note, If the Diameter of a Globe be 1, then its Circumference and superficial Content are the same, viz. 3.141592. And if the Diameter be 6, then the Solidity and superficial Content are each 113.697312.

The RULE.

The Rule.

Cube the Globe's Diameter, and divide by the proper Divisors for a Globe, you will have the solid Content.

Or,

A 2d Rule.

2. Multiply the Diameter by the Circumference, this gives the superficial Content in square Inches, then multiply by $\frac{1}{6}$ of the Diameter, and divide by the square Divisor in the Table, Page 91, for the Content required.

Or,

A 3d Rule.

3. Cube the Globe's Diameter, and multiply it by 11; and then divide the Product by 21; and this last Product divided by the square Divisors (as in the second Way) gives the Content in the respective Measure.

Or,

A 4th Rule.

4. Lastly, If the Cube of the Globe's Diameter be multiplied by .523598, (the Solidity of a Globe whose Diameter is Unity, or 1) it will produce the solid Content in Cubic Measure.

An Example.

Example. Let the Diameter of a Globe be 90 Inches; I demand how many Cubic Feet, Ale Gallons, Wine Gallons, Malt Bushels, and Pounds of green Soap the same will hold?

Operation.

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Operation.

The Operation.

$$CE = 90$$

$$90$$

$$\text{Square} = 8100$$

$$90$$

$$3300.237 \} 729000.00000 \text{ (220.89 Feet.)}$$

$$538.575 \} 729000.00000 \text{ (1353.57 Ale Gallons.)}$$

$$441.177 \} 729000.00000 \text{ (1652.39 Wine Gallons.)}$$

$$4107. \} 729000.00 \text{ (177.50 Malt Bushels.)}$$

$$48.975 \} 729000.00000 \text{ (14885.14 Green Soft Soap.)}$$

Feet.

Ale.

Wine.

Malt.

Green Soft Soap.

By the Sliding Rule on the Lines C and D.

By the Sliding Rule.

As the Gauge Point on D is to the Globe's Diameter on C, so is the Diameter on D, to the Content on C.

	D	C	D	C
As	{ 57.44 } { 23.2 } { 21.0 } { 64.1 } { 7.0 }	{ 90 } { 90 } { 90 } { 90 } { 90 }	{ 90 } { 90 } { 90 } { 90 } { 90 }	{ 220.89 Feet. { 1353.57 Ale Gallons. { 1652.39 Wine Gallons. { 177.5 Malt Bushels. { 14885.14 Gr. Soft Soap.
	G. Point	Diam.	Diam.	Content

Note. When the Globe's Diameter 90 is set to the Gauge Point 23.2 for Ale, and 21 for Wine, the other 90 on D doth fall off the Rule. Therefore you must have Recourse to Page 49, where you have a Remedy in such Cases; for by the Pen the Divisors for Ale is 538.575, and if I remove the Dot one Place to the Right Hand, it will be 5385.75, and its square Root is 73.38 the new Gauge Point, and that for Wine is 66.42.

Or,

By the Sliding Rule, by setting 1 on C to the old Gauge Point 23.2 and 21 on D, the other one on C will give 73.38, and 66.42 on D the new Gauge Points.

If 523598, the cubic Inches in a Globe whose Diameter is 1, Properties of the be divided by the square Divisors, the several Quotients will be Globe as to Di- Factors, by which if the Cube of the Diameter of any Sphere be visors and Fac- multiplied, the Product will be the Content in the same Measure. tors.

Divisors.

The new Gauge Points are for { Ale 73.38
Wine 66.42

	<i>Divisors.</i>	<i>Solidity.</i>	<i>Factors or Multipliers.</i>
Feet.	1728.)	.523598000	(.000303 Feet.
Ale.	282.)	.523598	(.001856 Ale Gallons.
Wine.	231.)	.523598	(.002267 Wine Gallons.
Malt.	2150.4)	.5235980	(.000243 Malt Bushels.
Tallow gross.	30.28)	.52359800	(.017291 Tallow Pounds gross.
Tallow net.	31.4)	.5235980	(.016675 Tallow Pounds net.
Hard Soap.	28.0)	.52359800	(.018693 Hard Soap.
Green Soft Soap.	25.67)	.52359800	(.020397 Green Soft Soap.
White Soft Soap.	25.56)	.52359800	(.020484 White Soft Soap.
Raw Starch.	34.8)	.523598000	(.01504592 Green or raw Starch.

An Example.

As for Example. The Diameter of the Globe is 90 Inches, its Cube is 729000; this multiplied by .000303 the Factor for Feet, the Product is 220.89 Feet, the Content of the Globe as below.

By the Sliding Rule.

By the Sliding Rule on the Lines D and E.

Set 1 upon D to the Factor upon E, and against any Diameter upon D, is the Content upon E in the same Measure.

D	E	D	E
As 1 is to	{ .000303 .001856 .002267 .000243 .020397 }	{ 90 90 90 90 90 }	{ 220.89 Feet. 1353.57 Ale Gallons. 1052.39 Wine Gallons. 177.5 Malt Bushels. 14885.14 Green Soft So.
	Multiplier	Diam.	Content

A notable Question with some.

When Gaugers have met together, I have frequently known it asked by some who fancied themselves more knowing than the rest, What 8 upon 9 is by the Rule? That is, if the Diameter of a Vessel be 9, and Depth be 8 Inches, what is the Content? Answer, 1.8 Ale Gallons. For your new Gauge Point will be 60, to which set 8, and against 9 is 1.8. See Page 49. This, amongst them, is thought to be a very learned and deep Question. Also, What is 9 upon 8? Answer, 1.6 Ale Gallons.

The Segment of a Globe.

II. To gauge the Segment of a Globe.

See Plate II. Fig. 12.

Definition.

Definition. The Segment of a Sphere, or Globe, is a Part of it cut off by a Plane; and therefore the Base of such a Segment must

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must always be a Circle, and its Superficies a Part of the Surface of the Sphere, which Segment is always less than half the Sphere.

The R U L E.

The Rule.

First, You must always be careful to find (or take) the true Base AB, which may be exactly done (in any Part of the Sphere) by knowing the whole Diameter, or Axis CE, of which the Height of the Segment CD is a Part: For it is plain by the Figure (to every Geometrician) that $AD=DB$ is a Geometrical Mean between CD and DE: Then for DB say,

By the Sliding Rule, on the Lines C and D.

D C D C
As 28 is to 28, so is 62 to 41.66 the Mean.

Or,

As 62 is to 62, so is 28 to 41.66 as before.

Secondly, when this is done, multiply the triple Height of the Segment DC, by the Square of half the Chord, viz. $AD=DB$; to this add the Cube of the Versed Sine or Height DC; and this Sum divided by the Divisors for a Globe, gives the Content of the Segment.

Note, The square of $AD=DB$, is always equal to the Note. Product of CE multiplied by DC.

Example. Let the Diameter of a Globe be $CE=90$, the An Example, Chord of the Segment $AB=83.32$, the Versed Sine or Height $CD=28$; I demand what is the Content in Feet, Ale Gallons, Wine Gallons, Malt Butthels, Pounds of Tallow gross, Tallow net, Hard Soap, White Soft Soap, green Soft Soap, and green Starch?

Operation.

The Operation,

$CD=28$ $CD=28$ $DE=62$

3 28 $CD=28$

84 224 496

56 124

784 1736 = Square of AD.

28 84 three times CD.

6272 6944

1568 13888

21952 145824

add 21952 Cube of the Versed Sine or Height Feet.

3300.237 167776.00000 (50.84 Feet.

538.575 167776.00000 (311.51 Ale Gallons.

.....

Wine.	441.177)	167776.00000	(380.29 Wine Gallons.
Malt.	41.07)	167776.00	(40.85 Malt Bushels.
GreenSoftSoap.	48.975)	167776.00000	(3425.79 Green Soft Soap.
Tallow gross.	57.825)	167776.00000	(2901.44 Pounds of Tallow gross.
Tallow net.	59.97)	167776.0000	(2797.66 Pounds of Tallow net.
Hard Soap.	51.84)	167776.0000	(3236.42 Pounds of Hard Soap.
WhiteSoftSoap.	48.815)	167776.00000	(3437.32 Pounds of white Soft Soap.
Starch.	66.48)	167776.00000	(2524.759 Pounds of green Starch.

By the Sliding Rule.

By the Directions in Chap. XIII. you may divide the several Dividends, and you will find them on the Rule the same as were found by the Pen.

Of the Frustum
of a Globe.

12. To gauge the greater Segment of a Globe.

See Plate II. Fig. 12.

Definition.

Definition. The greater Segment of a Globe is a Piece cut off; or, as in this Figure, it is the Part AEB, and is more than half the Globe.

The Rule.

The R U L E.

For this is the same as for the lesser Segment of a Globe, which see in Page 112.

An Example.

Example. Let the Diameter of the Globe be 90, the Chord of the Segment AB=83.32, and the Height of the Segment DE=62 Inches; I demand how many Feet, Ale, and Wine Gallons, Malt Bushels, Pounds of Tallow gross, Pounds of Tallow net, Pounds of Hard Soap, Pounds of white Soft Soap, Pounds of green Soft Soap, and Pounds of green Starch the Segment AEB will contain?

Operation.

Operation.

$$\begin{array}{r} DE=62 \\ 3 \\ \hline 186 \end{array}$$

$$\begin{array}{r} DE=62 \\ 62 \\ \hline 124 \\ 372 \\ \hline 3844 \\ 62 \\ \hline 7688 \\ 23064 \\ \hline \end{array}$$

Cube of DE=238328

DE

Fig. 1 Page 81
An Oval, or Ellipsis.

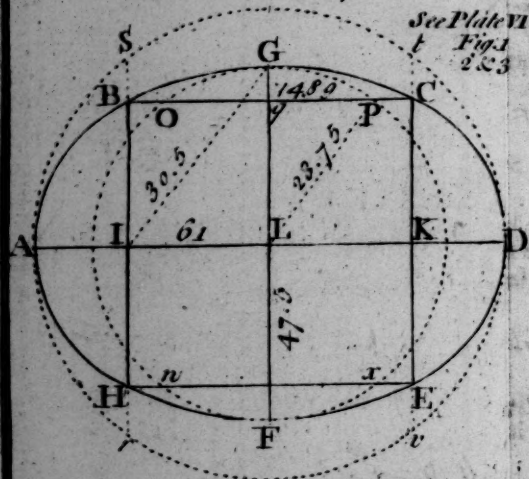


Fig. 2 Page 88
A Parabola

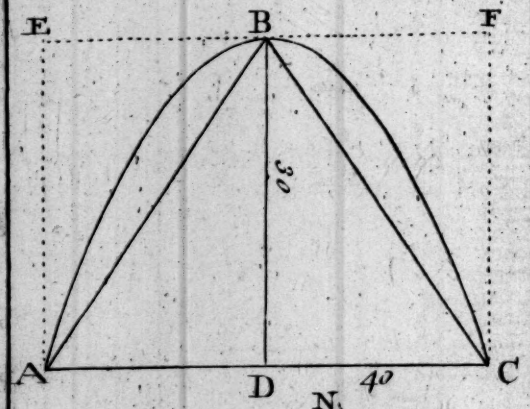


Fig. 3 Page 89
A Cycloid or Trochoid

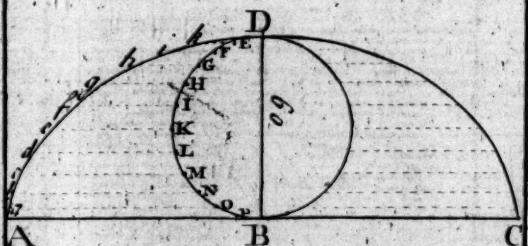


Fig. 7 Page 96
A Cylinder or Rolling Stone of a Garden

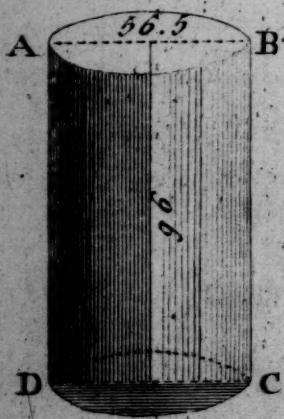


Fig. 8 Page 89
A Cone

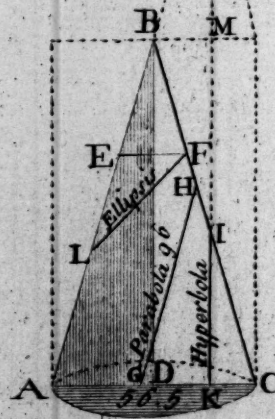


Fig. 9 Page 104
A Parabolic Conoid

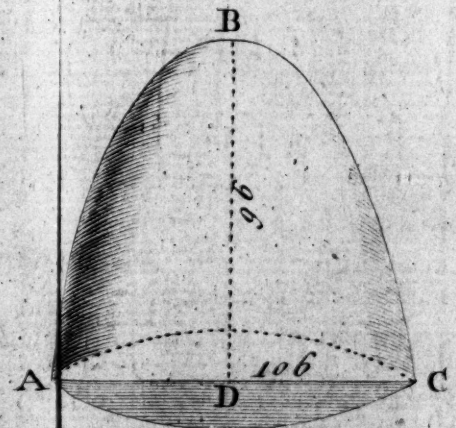


Fig. 4
A Cube or Die

Page 92

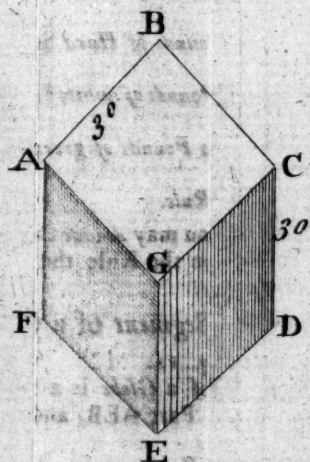


Fig. 5
A Parallelepipedon or Six Sided Solid

Page 93

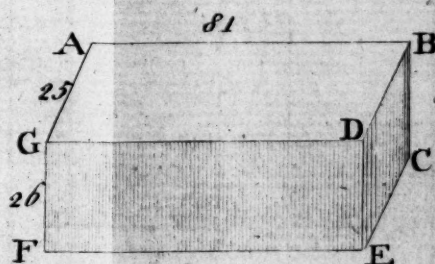


Fig. 6
A Prism, or three sided Solid

Page 95

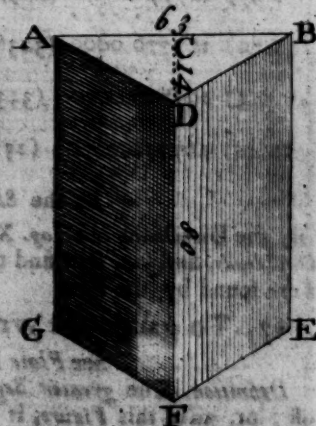


Fig. 10
A Hyperbolic Conoid

Page 105

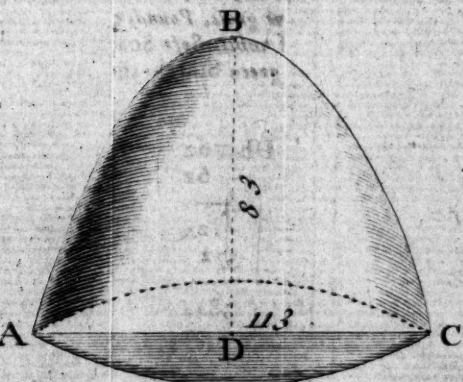


Fig. 11
A Parabolic Spindle

Page 107

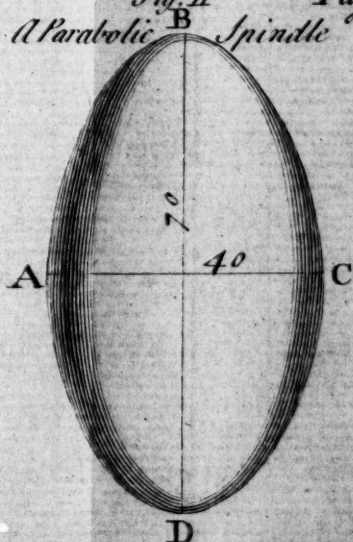
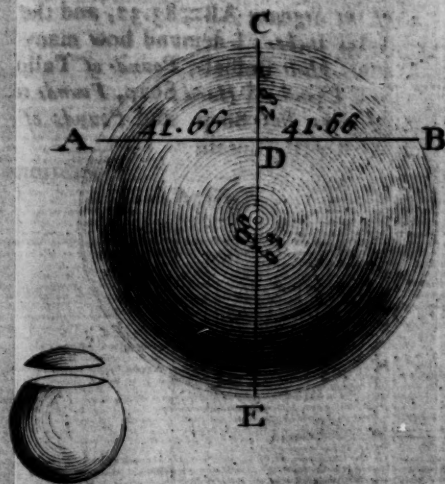


Fig. 12
A Globe

Page 109



Down to Nature Solids

DE = 0.1
CB = 1.8

1.00

1.00

1.00 = 1.00

1.00

1.00

1.00

1.00

1.00

1.00

1.00

1.00

1.00

1.00

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1.00

1.00

1.00

1.00

1. To Range a Spheroid

Set Plan III, Fig. 1

Distance A Spheroid is produced by the distance of the center of the spheroid from the center of the Earth, and is equal to 2 of its radius.

THE R U L E

Multiply the square of the conjugate Axis C D, then divide the square of the transverse Axis A B, and divide the Product

1 2

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$$DE = 62$$

$$CD = 28$$

$$496$$

$$124$$

$$1736 = q \text{ AD.}$$

$$\text{Triple of DE} = 186$$

$$10416$$

$$13888$$

$$1736$$

$$\text{Cube of DE add } 238328$$

$$3300.237) 561224.000000 \text{ (170.06 Feet.}$$

Feet.

$$538.575) 561224.000000 \text{ (1042.05 Ale Gallons.}$$

Ale.

$$441.177) 561224.000000 \text{ (1272.106 Wine Gallons.}$$

Wine.

$$4107.) 561224.00 \text{ (136.65 Malt Bushels.}$$

Malt.

$$49.02) 561224.000000 \text{ (11448.06 Pounds of green So. So. Green Soft Soap.}$$

$$57.825) 561224.000000 \text{ (9705.56 Pounds of Tallow gross Tallow gross.}$$

$$59.97) 561224.000000 \text{ (9358.41 Pounds of Tallow net. Tallow net.}$$

$$51.84) 561224.000000 \text{ (10826.08 Pounds of Hard Soap Hard Soap.}$$

$$48.81) 561224.000000 \text{ (11498.14 Pounds of white Soft So. White Soft Soap.}$$

$$66.48) 561224.000000 \text{ (5441.997 lb. of green Starch. Green Starch.}$$

If you add the Content of the Segment A C B to the Content of the Segment A E B, the Sum will be equal to the Content of the Globe, of which the Segment is a Part.

13. To gauge a Spheroid.

To gauge the Spheroid.

See Plate III. Fig. 1.

Definition. A Spheroid is produced by the Motion of a Semi-Ellipsis about its transverse Axis, and is equal to $\frac{2}{3}$ of its circumscribing Cylinder.

The R U L E.

The Rule.

Multiply the Square of the conjugate Axis C D into two Thirds of the transverse Axis A B, and divide the Product by

1 2

by

How to gauge Solids. Part I.

by the circular Divisors for Feet 2200.158, for Ale 359.05, for Wine 294.118, for Malt 2738, &c. (see Page 51.) and the Quotients will be the Content,

Or, which is better,

A second Rule. Multiply the Square of the conjugate Axis by the transverse Axis; and that Product divided by the Divisors proper for a Spheroid, (the same of the Globe in Pages 109, &c.) will give the Content.

An Example. Example. Let the transverse Axis A B be = 50 Inches, and the conjugate Axis C D = 31; I demand the Content in Feet, Ale, Wine, Malt, and Pounds of raw Starch?

The Operation.

Operation.

$$CD = 31$$

$$31$$

$$—$$

$$31$$

$$93$$

$$\text{Square} = 961$$

$$AB = 50$$

Feet. 3300.237) 48050.00000 (14.55 Feet.

Ale. 538.575) 48050.00000 (89.22 Ale Gallons.

Wine. 441.177) 48050.00000 (108.91 Wine Gallons.

Malt. 41.07) 48050.000 (11.699 Malt Bushels.

Starch. 66.48) 48050.00000 (722.773 Green or raw Starch.

By the Sliding Rule.

By the Sliding Rule.

	D	C	D	C	
	57.44	50	31	14.55	Feet.
	23.2	50	31	89.2	Ale Gallons.
As	21.	50	31	108.9	Wine Gallons.
	64.1	50	31	11.7	Malt Bushels.
	8.15	50	31	722.773	Raw Starch.

Gauge Point Diam. Diam. Content

Of the Irregular Prismoid.

To gauge an Irregular Prismoid.

As Vessels in the Form of irregular Prismoids are sometimes met with in the Practice of Gauging, and as several Authors have given Rules that are defective for finding their Contents, I shall here give the most certain Method for gauging Vessels of this Kind.

Mr. Ward, &c. mistaken.

Mr. Ward (in his *Long Mathematician's Guide*, page 437,) and several others, having demonstrated, That the Content in Inches of a Frustum of a Cone or Pyramid is equal to one Third of the

the Sum of the *Areas* of the *Top*, *Bottom*, and *Mean* between them, multiplied by the *Depth* of the *Frustrum*; seem to conclude the same Theorem would take place in any *irregular Prismoid*: But this will sufficiently appear to be erroneous, if it be considered, That if the *Sides* of an *irregular Prismoid* were continued, they would not meet in a *Point*, like the *Frustrum* of a *Cone* or *Pyramid*, but in a *Line*. To render this evident, let *Fig. 23, Plate I.* be a *Prismoid*, whose *Top* is an *Oblong*, the *Sides* of which are 16 and 18 Inches; and the *Bottom* an *Oblong*, whose *Sides* are 20 and 24 Inches: Now the *Dimensions* of the *Top* and *Bottom* not being alike proportional, the *Sides* being produced, the lesser *Sides* will meet in a *Line*, and will be in the Form of a *Triangular Prism*, cut off obliquely at each End. The upper *Frustrum* of this *Prismoid* may be gauged by the following

R U L E.

To one Sixth of the *Length* of the *Ridge*, add one Third of the *Length* of the *Bottom*; multiply this Sum by the *Breadth* at the *Bottom*, and this *Product* by the *Height*; the last *Product* is the *Content* in Inches, which divided by 282, or 231, gives the *Content* in Ale or Wine Gallons.

But the Lower *Frustrum*, which is the Form of all Vessels of this Kind, must be gauged by the following

R U L E.

Multiply half the greater *Breadth* by the lesser *Length*; Rule for Lower Frustrum, and half the greater *Length* by the lesser *Breadth*; and one Third of the *Difference* of the *Lengths* by the *Difference* of the *Breadths*: Then add these three *Products* together, and multiply the Sum by the *Depth*, the *Product* is the *Content* in Inches, which divided by 282 or 231, gives the *Content* in Ale or Wine Gallons.

Example. Let *Fig. 23, Plate I.* be the lower *Frustrum* of an irregular *Prismoid*, whose *Breadth* at *Top* is 16 Inches, and *Length* is 18 Inches; the *Breadth* at *Bottom* 20, and *Length* 24 Inches; and the *Depth* 30 Inches; what is the *Content* in Ale Gallons?

Half the greater *Breadth* is 10, which multiplied by the lesser *Length* 18, gives 180. The *Difference* between the greater *Length* 24, and the lesser *Length* 18, is 6, one Third whereof is 2, which multiplied by 4, the *Difference* of the *Breadth*, gives 8. Also half the greater *Length* is 12, which multiplied by the lesser *Breadth* 16, gives 192. Then 192, the *Product* of the greater *Length* by the lesser *Breadth*, and 180, the *Product* of the greater *Breadth* by the lesser *Length*, and 8, the *Product* of one Third of the *Difference* of the *Lengths*, by the *Difference* of the *Breadths*, being added together, make 380, which multiplied by 30, the *Depth*, gives 11400, the *Content* in Inches; which being divided by 282, quotes 40.4 the *Content* in Ale Gallons.

TO what is already delivered, I shall add the Proportions that the respective Solids have to the Cube and Cylinder having the same Base and Altitude.

		Inches.
A Cube.	1. A Cube, whose Side is 12 Inches, the solid Content is ————	1728
A Triangular Prism.	2. A Prism, having an equilateral Triangle, whose Side is 12 Inches for its Base, and its Altitude 12 Inches, has for its Content —	748.24
A square Pyramid.	3. A Square Pyramid, having its Height 12 Inches, and the Side of its Base 12 Inches, is $\frac{1}{3}$ of the above Cube, its Content is therefore	576.
A Triangular Pyramid.	4. A Triangular Pyramid, whose Height and Side of its triangular Base are each 12 Inches, is near $\frac{1}{7}$ of the Cube, its Content is —	249.413
A Cylinder.	5. A Cylinder, whose Diameter and Height are each 12 Inches, is $\frac{11}{14}$ of the above Cube, whence its Solidity is ————	1357.17
A Sphere.	6. A Sphere or Globe, whose Axis is 12 Inches, equal to the Side of the Cube, is $\frac{11}{16}$ of it, its solid Content is ————	904.78
A Cone.	7. A Cone, the Diameter of whose Base is 12 Inches, equal to the Side of the Cube, and Altitude 12 Inches, its Content is $\frac{5}{19}$ of that of the Cube, and is therefore ————	452.38829
A Parabolic Conoid.	8. A Parabolic Conoid, whose Diameter at the Base is 12 Inches, and its Height the same, being $\frac{1}{2}$ its circumscribing Cylinder, has for its solid Content ————	678.583
A Hyperbolic Conoid.	9. A Hyperbolic Conoid, whose Height and Diameter at the Base is 12 Inches, is $\frac{5}{12}$ of its circumscribing Cylinder; therefore its solid Content is ————	565.49
A Parabolic Spindle.	10. A Parabolic Spindle being $\frac{8}{13}$ of its circumscribing Cylinder; it follows, that if the Diameter of its Base and Height be each 12 Inches, its Content will be ————	723.824

See Plate III. Fig. 1.

C H A P.

C H A P. XXII.

Of the Measure of Exciseable Liquors, &c.

WINE, CYDER, PERRY, VERJUICE, are 63 Gallons to the
Hoghead, each Gallon containing 231 Cubic Inches. What Liquors
are measured by
the Wine Gallon.

MEAD, WASH, LOW WINES, SPIRITS, BRANDY, are
charged by the *Wine Gallon*.

SWEETS, 31 $\frac{1}{2}$ Gallons to the Barrel, }
MUM, 32 Gallons to the Barrel, } *Wine Measure.*

In the COUNTRY.

BEER, ALE, and VINEGAR, are 34 Gallons to the Barrel,
each Gallon containing 282 Cubic Inches. Ale, Beer, and
Vinegar in the
Country.

In LONDON.

BEER is 36, ALE is 32, and VINEGAR, is 34 Gallons to the
Barrel, each Gallon containing 282 Cubic Inches. Ale, Beer, and
Vinegar in Lon-
don.

To reduce London Beer Barrels to London Ale Barrels.

The RULE.

ADD one-eighth Part of the Barrels, Firkins, and Gallons given, to the
Barrels, Firkins, and Gallons given, and that Sum is the Number of Barrels,
Firkins, and Gallons in Ale Measure.

Example. I demand how many Barrels, Firkins, and Gallons of Ale are
contained in 34 Barrels, 2 Firkins, and 7 Gallons of Beer?

B. F. G.

8) 34 2 7
4 1 2 Add

39 0 1 The Answer in Ale.

As 8 is contained 4 times in 34, and 2 remains; I put 4 in the Place of
Barrels, and the 2 which remains being 2 Barrels or 8 Firkins, I add them to
the 2 Firkins, which makes 10 Firkins; which divided by 8 gives 1 Firkin
and 2 Gallons; the 1 I put under Firkins, and the 2 under Galls. and these
Sums added together produce 39B. 0F. 1G. of Ale London Measure.

To reduce London Ale Barrels to London Beer Barrels.

The RULE.

SUBTRACT one-ninth Part of the Barrels, Firkins, and Gallons, and the Re-
mainder will be the Number of Barrels, Firkins, and Gallons in Beer Measure.

Example. I demand how many Barrels, Firkins, and Gallons, Beer Mea-
sure, are contained in 39 B. 2F. 3G. of Ale?

9) 39 2 3
4 1 5 Subtract.

35 0 7 The Answer in Beer.

A TABLE of WINE MEASURE.

Names.	Averdupois Weight lb. oz. dr.	Cubic Inches.	Pints	Quarts	Gall	Rund.	Barr.	Tier.	Hogsh.	Punch.	Butt.	Ton.
(Ton)	2042 : 9 : 4	58212	2016	1008	252	14	8	6	4	3	2	1
Butt	1021 : 4 : 10	29106	1008	504	126	7	4	3	2	1½	1	
Punch	680 : 13 : 12	19404	672	336	84	4	2	2	1	1		
Hogthead	510 : 10 : 5	14553	504	252	63	3	2	1½	1			
Tierce	340 : 6 : 14	9702	336	168	42	2	1	1				
Barrel	251 : 6 : 10	7276	252	126	31½	1	¾					
Rundlet	145 : 14 : 6	4158	144	72	18	1						
Gallon	8 : 1 : 11	231	4	2	1							
Quart	2 : 6 : 6½	57½	2	1								
Pint	1 : 6 : 3¾	28¾	1									

N. B. An Anchor is 10 Gallons.

The common Wine Gallon sealed at Guildhall in London, by which all Wines, Brandies, Spirits, Strong Waters, Meads, Perry, Cyder, Vinegar, Oil and Honey, &c. are measured and sold, is supposed to contain 231 Cubic Inches: But Dr. Wybor d. in his *Treatise*, Page 289, doth suppose the Wine Gallon to contain But 224 or 225 Cubic Inches at the most; and pursuant to this Account, an Experiment was made by Mr. Richard Walker and Mr. Philip Shales, two General Officers in the Excise. They caused a Vessel to be made of Brals, in the Form of a Parallelopipedon, each Side of its Base was 4 Inches, and its Depth 14 Inches, so that its just Content was 224 Cubic Inches. This Vessel was produced at Guildhall in London (May 25, 1688) before the Lord Mayor, the Commissioners of Excise, the Rev. Mr. Flamstead, Astron. Reg. Mr. Halley, and several other Ingenious Gentlemen, in whose Presence Mr. Shales did exactly fill the aforesaid Brazen Vessel with clear Water, and very carefully emptied it into the old Standard Wine Gallon kept in Guildhall, which did so exactly fill it, that all then present were fully satisfied the Wine Gallon doth contain but 224 Cubic Inches. (This notable Experiment I saw tried.) However, for several Reasons, it was at that Time thought convenient to continue the former supposed Content of 231 Cubic Inches, to be the Wine Gallon, and that all Computations in gauging should be made from thence as above.

BEER MEASURE for London, is 36 Gallons to the Barrel.

Names.		Cubic Inches.	Pints.	Qu'ts.	Gall.	Fir.	Kil.	Barr.	Hd Buc.	Ton
In a	Ton	60912	1728	864	216	24	12	6	4	2
	Butt	30456	864	432	108	12	6	3	2	1
	Hoghead	15228	432	216	54	6	3	1½	1	
	Barrel	10152	288	144	36	4	2	1		
	Kilderkin	5076	144	72	18	2	1			
	Firkin	2538	72	36	9	1				
	Gallon	282	8	4	1					
	Quart	70½	2	1						
	Pint	35¼	1							

ALE MEASURE for London, is 32 Gallons to the Barrel.

Names.		Cubic Inches.	Pints.	Qu'ts.	Gall.	Fir.	Kil.	Barr.	Hog.
In a	Hoghead	13536	384	192	48	6	3	1½	1
	Barrel	9024	256	128	32	4	2	1	
	Kilderkin	4512	128	64	16	2	1		
	Firkin	2256	64	32	8	1			
	Gallon	282	8	4	1				
	Quart	70½	2	1					
	Pint	35¼	1						

BEER and ALE MEASURE, for the Country, is 34 Gallons * to the Barrel.

Names.		Cubic Inches.	Pints.	Qu'ts.	Gall.	Fir.	Kil.	Barr.	Hog.
In a	Hoghead	14382	408	204	51	6	3	1½	1
	Barrel	9588	272	136	34	4	2	1	
	Kilderkin	4794	136	68	17	2	1		
	Firkin	2397	68	34	8½	1			
	Gallon	282	8	4	1				
	Quart	70½	2	1					
	Pint	35¼	1						

* And as One Pound Troy is in Proportion to the Cubic Inches in a Wine Gallon, so is One Pound Avoirdupois to the Cubic Inches in an Ale Gallon, that is, 12 : 231 :: 14½ : 28½ very near, the Cubic Inches contained in an Ale Gallon, as appears from an Experiment made by one Nicholas Gunton, General Gauger in the Excise, about 52 Years ago, who by such a Vessel mentioned in the last Page, did find the Standard Ale Quart kept in the Exchequer, (vide 12 Car. II.) to contain 70½ Cubic Inches; consequently the Ale Gallon must contain 282 Cubic Inches; and from thence these three Tables are computed.

WARD's Mathematicks, Page 35.

C H A P.

C H A P. XXIII.

Concerning the STANDARD Winchester BUSHEL and GALLON kept in his Majesty's Exchequer; shewing when and how their Contents were settled by Act of Parliament. Also the Standard Avoirdupoise and Troy Weights kept in the Exchequer, compared with each other, and with the said Bushel, Half Bushel, Peck and Gallon; with Tables for finding whether the Content of the said Corn-Measures are equal to the Standard, or not, when their Diameter or Depth vary from it.

Of the Winchester Bushel.

11 Hen. VII.
Cap. 4.

12 Hen. VII.
Cap. 5.

I Shall here, for the Satisfaction of the inquisitive Reader, give an Account how the Content of the *Winchester Bushel* came to be ascertained.

By the Statute of the 11th Hen. VII. Cap. 4. it is enacted, That *Standard Weights and Measures* be made and sent to the several Cities, Boroughs, and Market Towns therein mentioned, which was accordingly done. But the Statute of the 12th Hen. VII. Cap. 5. recites, that upon more diligent Examinations, the said *Standard Weights and Measures* were found defective: And enacts, That the Measure of a *Bushel* shall contain eight Gallons of *Wheat*, and that every Gallon contain eight Pounds Troy of *Wheat*, and that every Pound contain 12 Ounces Troy Weight, and every Ounce contain 20 Sterlings, (now 20 Penny-weights,) and every Sterling or Penny-weight, be of the Weight of 32 Corns of *Wheat* that grew in the Middle of the Ear of *Wheat*, and that a *Standard* of a *Bushel* and a *Gallon* after this Assize be made and kept in the *King's Treasury* for ever: And new *Bushels* and *Gallons* were ordered to be made, and sent to the several Cities, Boroughs, &c. and the old ones brought back and broken.

Standard Bushel and Gallons, in whose Custody.

Accordingly there remains now in the Custody of the *Chamberlain* of the *Exchequer*, a *Standard* Brass *Bushel*, and a *Standard* *Gallon* agreeing thereto: Upon the *Bushel* there is this Inscription,

Henricus Septimus, Dei Gratia, Rex Angliae & Franciae.

An Experiment to ascertain the Content of the Standard.

In February 1696, when a Bill was depending in Parliament for laying a Duty on Malt, Mr. George Tollet, Mr. Phil. Shales, Mr. Tho. Jett, and Mr. Tho. Everard, in the Presence of several Members

Members of the *House of Commons*, did make an Experiment in order to find the *true Content* of the said *Standard Bushel* in the *Exchequer*; and the said *Brass Bushel* being exactly filled with common *Spring Water*, and the said *Water* being measured out again by a regular *Parallelopipedon**, whose *Base* was *four Inches Square*, and the *Depth* *14 Inches*, was found to contain *2145.6 solid Inches*; the said *Water* was also weighed by the *Standard Weights* in the *Exchequer*, and by a *Beam* which would turn with six Grains, with *30 Pounds* in each *Scale*, and found to be *1131 Ounces* and *14 Penny-weights Troy*.

Now to settle the *Dimensions* for a *Bushel* to answer the said *Standard*, these were agreed upon as most convenient, *viz.* and Depth, why *18.5 Inches Diameter*, and *8 Inches deep*, for a *Cylindrical* Vessel of these *Dimensions* will contain *2150.42 solid Inches*; which exceeding the *Content* of the *Standard Bushel* but *4.82 Inches*, and there being no other convenient *Dimensions* without counting to the *hundredth Part of an Inch*, that would come so near as these, it was enacted in the *Act* for laying a *Duty upon Malt*, The Diameter settled as they now stand.

That every round *Bushel* with a plain and even *Bottom*, being *eighteen Inches* and a half (*throughout*) *Diameter*, and *eight Inches deep*, shall be esteemed a legal *Winchester Bushel*, according to the *Standard* in his Majesty's *Exchequer*. The Description of the Bushel.

When this Experiment was made at the *Exchequer*, the said *Gentlemen* also compared the *Standard Troy Weights* with the *Standard Avoirdupoise Weights*, and found that *15 Pound Avoirdupoise* were equal to *18 Pounds, 2 Ounces, and 15 Penny-weight Troy*; so that *146 Ounces Avoirdupoise* are equal to *218.75 Ounces Troy*, which, in the least *Terms in whole Numbers*, are as follow:

<i>Avoirdupoise.</i>	<i>Troy.</i>
192	175 Ounces.
144	175 Pounds.

The *Bushel*, as now settled, contains *2150.42 solid Inches*, as shewn above, and will contain of common *Spring Water* *1134.34 Ounces Troy*: For,

As *2145.6* the *Inches* in the *Brass Standard*,
Is to *1131.7* the *Troy Ounces* of *Water* it contained;
So is *2150.42* the *content* of a *Bushel*, as now settled,
To *1134.34*. The Proportion.

Hence the following *Table* shews the *Content* in *solid Inches*, of a *Bushel*, *Half Bushel*, *Peck*, and *Gallon*; and likewise the *Weight of Water* that each will contain. The Inches and Water contained in a Bushel, &c.

Inches.

* See how the *Content* of the *Wine Gallon* at *Grainhall, London*, found by this *Vessel*, *Page 120.*

Of the Exchequer Bushel. Part I.

	Inches.	Troy.			Avoirdupoise.		
		lb.	oz.	pwts.	lb.	oz.	dr.
<i>Bushel</i> ———	2150.42	64	6.	6.88	77	12.	8.60
<i>Half Bushel</i> —	1075.21	47	3.	3.44	37	14.	4.30
<i>Peck</i> ———	537.60	23	7.	11.72	19	7.	2.15
<i>Gallon</i> ———	268.80	11	9.	15.86	9	11.	9.05
<i>Quart</i> ———	67.2	2	11.	8.96	2	6.	14.26
<i>Pint</i> ———	33.6	1	5.	10.48	1	11.	7.13
$\frac{1}{2}$ <i>Pint</i> ———	16.8	0	8.	15.24	0	5.	11.56

Use of the above Table.

By this Table it is easy to make any of the Measures therein mentioned, or to try such as are already made by the Help of a good Pair of Scales and true Weights. But where these are not to be had, the following Table shews the *Diameters* and *Depths* that will answer to the *Bushel*, *Half Bushel*, *Peck*, and *Gallon*, provided they be equally wide from the Top to the Bottom.

TABLE for trying whether any Bushel, Half Bushel, Peck, or Gallon, be equal to the Standard.

<i>Bushel.</i>		$\frac{1}{2}$ <i>Bushel.</i>		<i>Peck.</i>		<i>Gallon.</i>	
<i>Diam.</i>	<i>Depth.</i>	<i>Diam.</i>	<i>Depth.</i>	<i>Diam.</i>	<i>Depth.</i>	<i>Diam.</i>	<i>Depth.</i>
17.5	8.94	13.7	7.30	10.7	5.98	8.3	4.97
17.6	8.84	13.8	7.2	10.8	5.87	8.4	4.85
17.7	8.74	13.9	7.9	10.9	5.76	8.5	4.74
17.8	8.64	14.0	6.98	11.0	5.66	8.6	4.63
17.9	8.55	14.1	6.89	11.1	5.56	8.7	4.52
18.0	8.45	14.2	6.79	11.2	5.46	8.8	4.42
18.1	8.36	14.3	6.69	11.3	5.36	8.9	4.32
18.2	8.27	14.4	6.60	11.4	5.27	9.0	4.23
18.3	8.18	14.5	6.51	11.5	5.18	9.1	4.13
18.4	8.9	14.6	6.42	11.6	5.9	9.2	4.4
<i>Standard</i> 18.5	8.00	14.7	5.34	11.7	5.00	9.3	3.96
18.6	7.91	14.8	6.25	11.8	4.92	9.4	3.87
18.7	7.83	14.9	6.17	11.9	4.83	9.5	3.79
18.8	7.75	15.0	6.8	12.0	4.75	9.6	3.71
18.9	7.67	15.1	6.00	12.1	4.68	9.7	3.64
19.0	7.58	15.2	5.93	12.2	4.60	9.8	3.56
19.1	7.50	15.3	5.85	12.3	4.52	9.9	3.49
19.2	7.42	15.4	5.77	12.4	4.45	10.0	3.42
19.3	7.35	15.5	5.72	12.5	4.38	10.1	3.36
19.4	7.27	15.6	5.63	12.6	4.31	10.2	3.29
19.5	7.20	15.7	5.56	12.7	4.24	10.3	3.23

The

The USE of the foregoing TABLE.

Example 1. Suppose the *Diameter* of a *Bushel* be 19, and five-tenth Parts of any Inch : Find this in the first Column, and against it you have 7.20, that is, seven Inches and almost a Quarter : Now if the *Bushel* be exactly so deep, it is a legal *Bushel*.

Example 2. Suppose the *Diameter* of a *Bushel* be 19 Inches, and the *Depth* but 7.1, you will find by the Table the *Depth* ought to be 7.58 Inches, to be equal to the Standard ; and therefore you may conclude such a *Bushel* is *two little* : Now, to find how much it wants, say,

As 7.58 Inches, the *Depth* in the Table,
Is to 32, the *Quarts* in a *Bushel* ;
So is 7.1 the *Depth* of the *Bushel* given,
To 29.9 *Quarts* ; that is, twenty-nine *Quarts*, and nine-tenth Parts, (which is 30 *Quarts* *ferd* ;) *subtracted* from 32 and it leaves 2.1 *Quarts*, and so much that *Bushel* is *less* than the Standard. The like Method may be observed for trying the Truth of the *Half Bushel*, *Peck*, and *Gallon*.

N. B. If the *Bushel* be not exactly round, and the *Difference* A Note. of the *Diameters* be not above an Inch, add the longest and shortest *Diameters* together, and take half the Sum for the mean *Diameter*, and proceed as above.

Example 3. But suppose you would have a *Bushel* 16 Inches *Diameter*, what *Depth* must it be to be equal to the Standard *Bushel* ?

The RULE.

Divide Unity (or one *Bushel*) by the Area of the given *Diameter*, and the Quotient is the *Depth* that will make a *Bushel* of that *Diameter*.

See the Work.

Diameter 16 } Inches.

16

96

16

Area.

Depth.

= to 10 Inches and almost three *Quarters*, and so deep a *Bushel* must be, that is, 16 Inches *Diameter*, to be equal to the Standard.

But this is more expeditiously performed by the *Sliding Rule* on the Lines C and D, viz.

Set 16, the given *Diameter* on D, to 1 upon C, and against the Gauge Point 52.32 on D, is 10.7, the *Depth* upon C, &c.

CHAP.

C H A P. XXIV.

Shewing how to gauge all sorts of Open Vessels.

1. Of Vessels, as *Tuns, Back, Coolers, Coppers, &c.*

Of Mash-Tuns
and Guile-Tuns.

MASH-Tuns and Guile-Tuns, are generally the *Frustrums* of Cones, and it matters not whether they stand upon the less or greater Base, for the Method of gauging them is the same.

See Plate IV. Fig. 2.

The Rule.

The R U L E.

With your Sliding Cane, take the Diameter in the Middle of every 10 Inches from the Bottom upwards, and enter them with their Areas in Ale Gallons in your Dimension-Book, and also in your Stock-Book, which will be a Table for that Tun.

Or,

The Diameter may be found in any Part thereof, by knowing the Depth, and the top and bottom Diameters, by this

The Rule.

R U L E.

Divide the Difference between the top and bottom Diameters by the Depth of the Tun, and the Quotient is a common Multiplier, by which multiply any Depth, and add the Product to the bottom Diameter, (if the Tun stands on the lesser Base) or subtract it from the bottom Diameter (if the Tun stands upon the greater Base) and the Sum or Difference is the true Diameter at the Depth then taken.

An Example.

Example. Let the Depth E F be 60, the top Diameter A B = 48, and the bottom C D = 40 Inches; I demand the Diameter of the Middle of every 10 Inches from the Bottom upwards, and also how many Ale Gallons the Tun will hold?

The Operation.

Operation.

$$A B = 48$$

$$D C = 40$$

$$60 \div 8 = .1333 \text{ the common Multiplier.}$$

$$\text{The Depth} \quad 5$$

$.6665 + 40 = 40.7$ the Diameter at 5 Inches deep. And therefore $.1333 \times 15 = 2 + 40 = 42$ the Diameter at 15 Inches deep. Again, $.1333 \times 25 = 3.3 + 40 = 43.3$ the Diameter at 25 Inches deep. And, $.1333 \times 35 = 4.7 + 40 = 44.7$ the Diameter at 35 Inches deep. And by proceeding thus I have the Diameter in the Middle of every 10 Inches from the Bottom upwards, viz. at 45 Inches deep the Diameter is 46, and at 55 it is 47.3, as you see in the Figure. Now, by the Sliding Rule, find Areas (as I have taught in Page 33) in Ale Gallons, and they will stand thus:

Diam.

Diam.	Area.	Content.
47.3	6.23	62.3
46.	5.89	58.9
44.7	5.56	55.6
43.3	5.22	52.2
42.	4.91	49.1
40.7	4.61	46.1

The Sum is the Content of the Tun 324.2 Ale Gallons.

By removing the Dot one Place to the right Hand, every Area is multiplied by 10, which, added together, gives the Content of the Tun in Ale Gallons :

But when the Depth of the Tun is not even 10 Inches, (as this is) then you must add together as many Areas as are taken in the Middle of every 10 Inches ; and the other Part of the Depth, which is not even 10 Inches, as suppose 4, 5, 6, or 8, &c. must be multiplied by the uppermost Area, which Product added to the Sum of the other Areas, gives the Content : And this is the practical Way of calling up Gauges by those employed in the Excise.

But to find what the Tun will hold upon every Inch, (which is called *Inching the Tun*,) as is requisite in large Tuns used by common Brewers ; proceed thus : The Content of the Tun, as it stands upon Areas in the Middle of every 10 Inches, is 324.2 Gallons, which reduced into Barrels of 34 Gallons each, are 9B. 2F. 1.2G. which enter as you see in the following Table, whose Numbers signify Barrels, Firkins, and Gallons.

1. Then take the first Area 6.23, and subtract it from 9.2, First Area.
1, 2, as you are directed in Page 14.

Then there will remain 9.1 3.47, and thus continue subtracting 6.23 till the Tun be 10 Inches dry, when the Content will be 7B. 2F. 6.90G.

2. Take the second Area 5.89 Gallons dry, and subtract it till the Tun is 20 Inches dry, when the Remainder will be 5B. 3F. 7.80G.

3. Take the third Area 5.56, which subtract as before, till the Tun is 30 Inches dry, and the Remainder will then be 4B. 1F. 3.2G.

4. Take the fourth Area 5.22, and subtract it as before, till the Tun is 40 Inches dry, and the Remainder will be 2B. 3F. 2G.

5. Take the fifth Area 4.91, and subtract it as before, till the Tun is 50 Inches dry ; and the Remainder will be 1B. 1F. 3.9 G.

6. Take the sixth Area (or Drip) 4.61, and subtract it as before, till the Tun is 60 Inches dry ; and then there will remain nothing.

By this Way of Inching, you will have the Content of the Tun at every Inch from the Top (see the Operation.) But if you would be more exact, take an Area at every Inch deep, and that will be perfectly true ; for the Sum of them will be the true Content.

Operation.

To gauge Open vessels.
Operation.

Inches.	B. F. G.	Inches.	B. F. G.	Inches.	B. F. G.	Inches.	B. F. G.	Inches.	B. F. G.	Inches.	B. F. G.
9 2 1.2	Add 8.5	10 7 2 6.90	Area — 5.89	20 5 3 7.5	Area — 5.56	30 4 1 2.90	Add 8.5	40 3 3 1.70	Add 8.5	50 1 1 3.60	Add 8.5
9 1 0.7	Area --- 6.23	11 7 2 1.0	Add 8.5	21 5 3 1.94	Add 8.5	4 0 11.40	Area --- 5.22	2 2 10.20	Area --- 4.91	1 0 12.10	Area --- 4.61
10 1 3.47	Add 8.5	7 1 9.51	Area — 5.89	5 2 10.44	Area — 5.56	31 4 0 6.18	Area --- 5.22	41 2 2 5.29	Area --- 4.91	51 1 0 7.49	Area --- 4.61
9 0 11.97	Area --- 6.23	12 7 1 3.62	Add 8.5	22 5 2 4.88	Add 8.5	32 4 0 0.96	Area 8.5	42 2 2 0.38	Add 8.5	52 1 0 2.88	Add 8.5
2 9 0 5.74	Add 8.5	7 0 12.12	Area — 5.89	5 1 13.38	Area — 5.56	3 3 9.46	Area --- 5.22	2 1 8.88	Area --- 4.91	0 3 11.38	Area --- 4.61
8 3 14.24	Area --- 6.23	13 7 0 6.23	Area — 5.89	2 5 1 7.82	Area — 5.56	33 3 3 4.24	Add 8.5	43 2 1 3.97	Add 8.5	53 0 3 6.77	Area --- 4.61
3 8 3 8.01	Area --- 6.23	14 7 0 0.34	Add 8.5	24 5 1 2.26	Add 8.5	3 2 12.74	Area --- 5.22	2 0 12.47	Area --- 4.91	54 0 3 2.16	Add 8.5
4 8 3 1.78	Add 8.5	6 3 8.84	Area — 5.89	5 0 10.76	Area — 5.56	34 3 2 7.52	Area --- 5.22	44 2 0 7.56	Area --- 4.91	0 2 10.66	Area --- 4.61
8 2 10.28	Area --- 6.23	15 6 3 2.95	Add 8.5	25 5 0 5.20	Add 8.5	35 3 2 2.30	Add 8.5	45 2 0 2.65	Add 8.5	55 0 2 6.05	Area --- 4.61
5 8 2 4.05	Add 8.5	6 2 11.45	Area — 5.89	4 3 13.70	Area — 5.56	3 1 10.80	Area --- 5.52	1 3 11.15	Area --- 4.91	56 0 2 1.44	Add 8.5
8 1 12.55	Area --- 6.23	16 6 2 5.56	Add 8.5	26 4 3 8.14	Area — 5.56	36 3 1 5.58	Area --- 5.52	46 1 3 6.24	Area --- 4.21	0 1 9.04	Area --- 4.61
6 8 1 6.32	Area --- 6.23	6 1 14.06	Area — 5.89	27 4 3 2.58	Add 8.5	37 3 1 0.36	Add 8.5	47 1 3 1.33	Add 8.5	57 0 1 5.33	Area --- 4.61
7 8 1 0.09	Add 8.5	17 6 1 8.17	Area — 5.89	4 2 11.08	Area — 5.56	3 0 8.86	Area --- 5.22	1 2 9.83	Area --- 4.91	58 0 1 0.72	Add 8.5
8 0 8.59	Area --- 6.23	18 6 1 2.28	Add 8.5	28 4 2 5.52	Add 8.5	38 3 0 3.64	Add 8.5	48 1 2 4.92	Area --- 4.91	0 0 9.22	Area --- 4.61
8 0 2.36	Add 8.5	6 0 10.78	Area 5.89	4 1 14.02	Area — 5.50	2 3 12.14	Area --- 5.22	49 1 2 0.01	Add 8.5	59 0 0 4.61	The Drip 4.61
7 3 10.86	Area --- 6.23	19 6 0 4.89	Add 8.5	29 4 1 8.46	Area — 5.56	39 2 3 6.92	Area --- 5.22	1 1 8.51	Area --- 4.91	60 0 0 0.	
9 7 3 4.65	Add 8.5	5 3 13.39	Area — 5.89	4 1 2.90		40 2 3 1.70		50 1 1 3.60			
7 2 13.13	Area --- 6.23	20 5 3 7.50									

Note, 8.5 is added, and 1 Firkin taken away, otherwise the Subtraction could not be made.

The whole Depth ————— Inches Bar. Firkin. Gall.
 The Drip ————— 60 : : 9 : 2 : 1.2
 ————— 01 : : 0 : 0 : 4.61

2. To find the Drip or Fall of a Tun.

Of the Drip of
a Tun.

See Plate IV. Fig. 9.

Definition. The Drip or Fall of a Tun, is when it is set a little sloping on one Side, for Conveniency of cleansing; so that when the Bottom is just visible at D, the other Side BC is part covered; draw the Line EF parallel to the Bottom CD; and then it is plain, that when the Tun stands in this oblique Position, the Quantity of Wort equal to CD is not Half of CDFE, because the Tun stands upon its lesser Base: But if it had stood upon its greater Base, the Quantity would have been more than Half CDFE. And if the Tun had been a Cylinder, the two Quantities, viz. CDE and DEF would be exactly equal.

Now if we find the Content of the Part ABGA, and subtract it from the Tun's Content, we shall have the Quantity of Liquor that will fill up the Tun to B. So that the Liquor's Surface will then be represented by the Line GB.

To find the slant Height of any open Tun, this is The slant Height.

The RULE.

To the Square of the Depth, add the Square of half the Difference of the two Diameters, and the Square Root of that Sum is the slant Height. By which I find $AD=BC=60.13$, and $EC=15.57$ Inches. The Rule.

And as it is shewn in Page 126, I find the Diameter GH to be 45.5, and FE 42.1.

Note. If the Vessel is empty, and you would find the Point G, that is, where the Surface of the Liquor would cut, if it were filled up to B; it may be done by the Help of a Quadrant, such as I have described in my *Mechanic Dialling*, Page 11; for looking thro' the Sight at B, and the Thread falling at the Beginning of the first Degree in the Limb, your Sight will then be directed to the Point G, where you may make a Mark with Chalk: Measure the Distance AG with your Gauging Cane, which I suppose to be 17.5; then find AL, and it will always hold very near:

$$\text{As } \left\{ \begin{array}{l} AD \\ 60.13 \end{array} \right\} \text{ is to } \left\{ \begin{array}{l} IK \\ 60 \end{array} \right\} \text{ so is } \left\{ \begin{array}{l} AG \\ 17.5 \end{array} \right\} \text{ to } \left\{ \begin{array}{l} AL \\ 17.46 \end{array} \right\}$$

Now, to find what the Part ABGA will hold, this is

The RULE.

The Rule.

To the Square of the Top Diameter AB 48, add one half of the Rectangle, or Product of the Top and Bottom Diameters; multiply the Sum by the Depth AL, and divide the Product by 1077.15 for Ale, and by 882.354 for Wine.

PART I.

K

See

The Operation.

See the Work.

$$ABq=2304. AB=48 \times GH=45.5 \text{ gives } 2184; \text{ its } \frac{1}{2}=1092$$

$$+ 2304=3396 \times AL 17.46=58294.16$$

$$1077.15=54.12 \text{ Ale Gallons.}$$

$$\text{Tun's Content}=324.2 \text{ A. G.}$$

$$\text{Subtract the Part ABGA}=54.12$$

$$\text{Remains GBCDG}=270.08$$

To find what FEDF will hold.

The Operation.

Operation.

$$FE=42.1$$

$$42.1$$

$$421$$

$$842$$

$$1684$$

$$\text{Square } 1772.41$$

$$\text{Add } 842.$$

$$2614.41$$

$$\text{Depth}=15.53$$

$$784323$$

$$1307205$$

$$1307205$$

$$261441$$

$$1077.15) 40601.7873 \text{ (37.69 Ale Gallons.)}$$

$$323145$$

$$828728$$

$$754005$$

$$747237$$

$$646290$$

$$1009473$$

$$969435$$

$$40038$$

Lastly,

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Lastly, To find how much Liquor will cover the Bottom, viz. the Part DECD.

Operation.

The Operation,

$$\begin{array}{r}
 DC=40 \\
 \times 40 \\
 \hline
 \text{Square } 1600 \\
 \text{Add } 842 \\
 \hline
 \text{Sum } 2442 \\
 \text{Depth } 15.53
 \end{array}$$

$$\begin{array}{r}
 FE=42.1 \\
 DC= \times 40 \\
 \hline
 1684.0 \\
 \text{Half} = 842
 \end{array}$$

$$\begin{array}{r}
 7326 \\
 12210 \\
 12210 \\
 2442 \\
 \hline
 1077.19 \quad 37924.2600 \quad (35.207)
 \end{array}$$

$$\begin{array}{r}
 323145 \\
 560976 \\
 538575 \\
 \hline
 224010 \\
 215430
 \end{array}$$

$$\begin{array}{r}
 858000 \\
 754005 \\
 \hline
 103995
 \end{array}$$

$$\begin{array}{l}
 FEDF=37.69 \\
 DECD=35.21
 \end{array}
 \left. \vphantom{\begin{array}{l} FEDF=37.69 \\ DECD=35.21 \end{array}} \right\} \text{Ale Gallons.}$$

$$DCEFD=72.90$$

3. To gauge a Mash-Tun *.

To gauge Mash Tuns.

See Plate IV. Fig. 2.

Definition. Mash-Tuns are generally Frustums of Cones, standing sometimes on the greater, and sometimes on the lesser Base; and therefore the Diameters are taken with your Sliding Rule,

K 2 (if

* I have known many Country people to use one and the same Tun both for Mashing, and also for Working their Ale; for which Reason I shall make use of Fig. 2. Plate IV.

To gauge Open Vessels. Part. I.

(if it is long enough,) by pinning one End thereof fast, and drawing out the other Slider, it will shew you the Diameter in Inches and Decimal Parts, if less than 36 Inches: But if your Tun be large, you must use your Sliding Cane, and take the Diameters in the Middle of every 10 Inches from the Bottom upwards, which will be exact enough for this Purpose, and insert them in your Dimension-Book: But before the Areas can be fixed, they must be had in Gallons, Corn-Measures; and because 2150.4 square Inches are contained in one Bushel, and 2738 is a Divisor for a circular Bushel; and because 8 Gallons make 1 Bushel, take $\frac{1}{8}$ of 2150.4, which is 268.8, its square Root is 16.4 ferè, which is a Gauge Point for square Mash Tuns; also $\frac{1}{8}$ of 2738 is 342.25 its square Root is 18.5, which is a Gauge Point for round Mash Tuns.

Observation.

But it being found by Experience, that after two or three several sorts of Worts have passed thro' the Malt, it is more compact by an eighth Part; therefore take $\frac{1}{8}$ Part of 268.8, and it is 33.6, which subtract from 268.8, and it leaves 235.2, whose square Root is 15.3, which is a Gauge Point for square Mash-Tuns. Also $\frac{1}{8}$ of 342.25 is 42.78, which taken from 342.25 leaves 299.47, and its square Root is 17.3, the Gauge Point for circular Mash-Tuns. By the Work above I have found,

Divisors. Gauge Points.

For a } Square Mash-Tun 235.2 — 15.3
Circular Mash-Tun 299.47 — 17.3

So that if you square the Diameters, and divide by 299.47, the Quotient will be the Area in Gallons; which divided by 8, gives the Bushels of Malt brewed.

An Example.

Example. Let the Diameter of the Tun above-mentioned be as is there expressed; how many Bushels of Malt (Goods) doth it contain?

By the Sliding Rule.

Operation by the Sliding Rule.

D	C	D	C
17.3	1	47.3	7.4
17.3	1	46.	7.1
17.3	1	44.7	6.7
17.3	1	43.3	6.3
17.3	1	42.0	5.9
17.3	1	40.7	5.55

Gauge Point, Unity

Diam.

Divisor 8) Sum 389.5 (48.7 Bush. nearly.

Note,

Note. In adding of these Areas, the Dot is removed one Place to the right Hand, and that multiplies by 10.

4. To gauge and tabulate a Distiller's Back, as now practised both in London and the Country. To gauge a Back.

Plate IV. Fig. 4. represents a Back, whose Bases are elliptical and uneven, but alike situated.

Find the Center of the Back *; and in that Center strike a Nail, as at *w*. Then with a Line and a Bit of Chalk describe a Circle; this done, take a Line and find the Transverse Axis (or longest Diameter) by holding the Line from *L* to *M*, over the Center *w*, and at *L* and *M*, make a Mark. Then find the Conjugate Axis (or shortest Diameter) as *VZ*, and mark it with Chalk. Then take the Depth in that Place, where the Officer proposes to take his Gauge, which suppose at *m*; and the Depth from *m* to *w* is = to 36 Inches; at which Place make a Notch. Then draw straight Lines with Chalk, from *M* to *B*, from *L* to *A*, from *Y* to *N*, and from *Z* to *O*: The Back being thus quartered, proceed to take the Diameters thus: On the straight Lines, make a Mark, in the Middle of every 6 Inches, (with your Chalk) as at *AB*, *CD*, *EF*, *GH*, *IK*, *LM*, which are the 6 Transverse Diameters, (as the Depth of the Back is 36 Inches;) and for the 6 Conjugate Diameters, make the like Marks at *NO*, *PQ*, *RS*, *TV*, *WX*, *YZ*: Then take the several Lengths and Breadths in Inches, and enter them on a Piece of Paper, as under.

Depth In Inches,	Length (or Transverse Diameters.)	Breadth (or Conjugate Diameters.)
6	AB=62	NO=32
6	CD=65	PQ=33
6	EF=69	RS=35
6	GH=72	TV=36
6	IK=75	WX=37
6	LM=79	YZ=39
	K 3	Then

* In Page 83, I have taught how to find the Center of an Ellipse; but as the Sides of a Back prevents your drawing such Lines, as are there directed, you must, with a Line, find the longest or transverse Diameter, and with a Bit of Chalk make a Mark at each End of it, as at *L* and *M*; then extend a chalked Line from *L* to *M*, and strike it as Carpenters do on their Timber to saw straight by: Having thus settled your transverse Diameter; to obtain the Conjugate Diameter and Center proceed thus: Find the Middle of the Line *L M*, (which is at *w*), and from the Point *w*, with a Tee Square, draw a Line to the right Hand, and another to the left Hand, at right Angles with the Line *L M*, then extend a chalked Line to each Side of the Back exactly over the Lines made by the Tee Square and strike it, and you have obtained the Center, and also quartered the Bottom of the Back.

To find the
Drip.

Then to find the *Drip* of the *Back*: Take a *regular Vessel*, and fill it with water, and continue pouring in Water till you have *just covered* the *Bottom* of the *Back*; then with your *Rule*, dip it, to know how much it *wets*; which suppose to be *1.5 Inch*, and that the *Quantity* of *Water* poured in to cover the *Bottom*, is just *16 Gallons*.

To find the
Areas of the se-
veral Diameters

Now to find the *Areas* of the several *Diameters*: Multiply together the *Diameters* *62* and *32*, and that *Product* divided by *294*, (the cubical Inches in a *Wine Gallon*) the *Quotient* will be the *Area* = to *6.74 Gallons*, which multiply by *6*, that *Product* will be *40.44 Gallons* = to the *Content* of the *first 6 Inches*. By this *Method* the other *5 Areas* are found; But you must observe as the *Drip* of the *Back* is found to be *1.5 Inch*, it must be subtracted from the *whole Depth* *36 Inches*, and the *Remainder* will be *34.5 Inches*: See the *whole Work*, as follows.

Inches.	Longest Diameter Inches.	Shortest Diameter Inches.	Mean Area in Wine Gallons.	Inches	Content of the se- veral Depths in Wine Gallons.
6	62	32	6.74	×	6 is 40.44
6	65	33	7.29	×	6 is 43.74
6	69	35	8.21	×	6 is 49.26
6	72	36	8.81	×	6 is 52.86
6	75	37	9.43	×	6 is 56.58
4.5	79	39	10.47	×	4.5 is 47.11
1.5	The Drip				is 16.00

36 The Whole Depth.

The Content is 305.99

By this *Work* it appears, that the *Back* contains *305.99 Gallons*, and that the last *mean Area* *10.47 Gallons* is multiplied by *4.5*, because the *Depth* of the *Drip* is subtracted from the last *6 Inches*.

To tabulate the
Back.

To tabulate the *Back*: Set down the *Content* *305.99 Gallons*, and subtract the several *mean Areas*, as often as you multiplied them, and the several *Remainders* will give you the *Contents* of the *Back* at any *dry Inch*, from *Top* to *Bottom*: But to prove the *Truth* of the *Work*, subtract the several *Contents* of the several *Depths* from the *Content* of the *Back*, and it verifies your *Work* at every *6 Inches*, and likewise at the last *4.5 Inches*, with the *Content* of the *Drip*, as under.

The Operation.

Gallons.

305.99 Content of the Back.

40.44 Content of the first 6 Inches.

265.55 What the Back hold at 6 Inches dry.

43.74 Content of the second 6 Inches.

221.81

Gallons.

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Gallons.

221.81 What the Back holds at 12 Inches dry.

49.26 Content of the third 6 Inches.

172.55 What the Back holds at 18 Inches dry.

52.86 Content of the fourth 6 Inches.

119.69 What the Back holds at 24 Inches dry.

56.58 Content of the fifth 6 Inches.

63.11 What the Back holds at 30 Inches dry.

47.11 Content of the last 4.5 Inches.

16.00

16.00 The Content of the Drip.

00

In the following Table compare the Subtraction at every six Inches, which is done by putting the mean Areas on a Piece of Paper, which (for the first 6 Inches) is 6.74, and at six Inches dry there will remain 265.55 as above; then proceed with the other several mean Areas, and your Table for this Back will stand as follows:

Inch.	Gallons	In	Gallons	In	Gallons	In	Gallons	In	Gallons	Inch.	Gall.
Full	305.99										
1	299.25	7	258.26	13	213.60	19	163.74	25	110.26	31	52.64
2	292.51	8	250.97	14	205.39	20	154.93	26	100.83	32	42.17
3	285.77	9	243.68	15	197.18	21	156.12	27	91.40	33	31.70
4	279.03	10	236.39	16	188.97	22	147.31	28	81.97	34	21.23
5	272.29	11	229.10	17	180.76	23	138.50	29	72.54	34.5	16.
	265.55	12	221.81	18	172.55	24	119.69	30	63.11	36	00.
Area 6.74		Area 7.29		Area 8.21		Area 8.81		Area 9.43		Area 10.47	

I have placed the several Areas under the Table, which are subtracted Six Times, as appears by what remains; only the last Area 10.47 is subtracted but four Times, and from the Remainder subtract one Half of the Area to 5.23; because what Depth remains to be tabulated at 36 Inches dry, is 4.5 Inches; and there remains 16 Gallons; which is what was put into the Back to find the Drip, which subtract from what the Back holds at 34.5 dry, and it leaves the Back OUT.

N. B. When the above Table is entered in a Book (where the Officer casts up what Quantity of Wash is decreased) the Decimal Parts of the Gallons may be omitted, except against the Word FULL.

5. To gauge Backs of an Irregular Figure.

The Gauger will often meet with *Wash-Backs* that are considerably Larger than the true *Ellipsis* and its *Segment*; and some as Large as the *Segment* of a *Circle*; it will therefore be necessary to pursue a different Method, and First find the Area of the Curve, exclusive of its *Segments*; and Secondly, find the Areas of the *Segments*, according to the Figures they represent, whether a *Circle* or *Parabola*, according to the Methods already laid down in this Book, at Pages 85 and 88.

In order to find the Area of the Curve, exclusive of the *Segments*, we must use the following

THEOREM.

As one Fourth of the Area of any regular *Ellipsis*, less half the Area of the *Segment*, is to the Sum of any Number of equidistant Ordinates rightly applied, multiplied into the Distance of the First and Last Ordinates; so is Unity or One to the Sum of its like Number of equidistant Ordinates rightly applied, multiplied into the Distance of their extreme Ordinates.

By this THEOREM general Divisors for any Number of equidistant Ordinates in any Curve, exclusive of the *Segment*, may be readily found. Thus 1.95065 will be the general Divisor for two Ordinates, 2.92232 for three Ordinates, 3.90128 for four Ordinates, 4.88472 for five Ordinates, 5.87114 for six Ordinates, 6.8594 for seven Ordinates, 7.84993 for eight Ordinates, 8.84148 for nine Ordinates, and 9.83403 for ten Ordinates.

Being provided with general Divisors, the Area of the Curve, exclusive of the *Segment*, will be found by the following

R. U. L. E.

Multiply the Sum of the Lengths of all the Ordinates, by the Distance between the Conjugate Axis and the last Ordinate, and divide the Product by the general Divisor corresponding with the Number of Ordinates, and the Quotient will be the Area of the Curve required.

Example. Let Figure 24, Plate I, represent an *Elliptical Wash-Back*, whose Segments are those of a *Circle*, the whole Depth, *n* o, 60 Inches, and the Lengths of the several Ordinates at equal Distances taken as follows; I demand the several Areas in Beer and Wine Gallons, and likewise the whole Content?

Top Dimensions.		Middle Dimensions.		Bottom Dimensions.	
Transverse A A = 46		Transverse B B = 48		Transverse C C = 50	
Conjugate a a = 20.3		Conjugate b b = 22.3		Conjugate c c = 24	
Common Dist. = 4.6		Common Dist. = 4.8		Common Dist. = 5.0	
Ordinates.	12.8	Ordinates.	13.8	Ordinates.	15.2
	16.0		17.5		19.2
	18.4		20.3		21.8
	19.7		22.0		23.4
	20.3		22.4		24.0
	20.3		22.4		24.0
	19.7		21.8		23.4
	18.3		20.2		21.7
	16.2		17.6		18.7
	12.3		14.0		14.8
Sum 174.3		Sum 192.0		Sum 206.2	

For

Ch. XXIV. To gauge Irregular Backs.

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For the Top Area.

Top Area.

Then 174.3, multiplied by 18.4, the Distance between n , n , gives 3207.120; which divided by 4.88472, the common Divisor for five Ordinates, quotes 656.56, the Area of the Curve in Inches, exclusive of the Segments. And the Area of the Segment A l , will (by the Method laid down for finding the Area of the Segment of a Circle, Page 85) be found to be 43.04 Inches, and the Area of the Segment A n 42.48 Inches: Which Areas added to the Area of the Curve found above, gives 742.08, the whole Area in Inches. And that divided by 282, and 231, quotes 2.63 Beer Gallons, and 3.21 Wine Gallons.

For the Middle Area.

Middle Area.

Multiply 192.0 by 19.2, the Distance $d d$, the Product is 3686.4 which divided by 4.88472, quotes 754.68, the Area of the Curve, exclusive of the Segments; and the Area of these found as before will be 48.75, and 48.16, which added to the Area of the Curve, gives 851.59, the whole Area in Inches. Then dividing by 282, and 231, we have 3.02 Beer Gallons, and 3.68 Wine Gallons.

For the Bottom Area.

Bottom.

Multiply 206.2, by 20, the Distance $k k$, the Product is 4124, which divided by 4.88472, quotes 844.26, the Area of the Curve. And the Area of the Segments, found as before, will be 54.81, and 53.59, which added to the Area of the Curve, gives 952.66, the whole Area in Inches. And being divided by 282, and 231, quotes 3.378 Beer Gallons, and 4.124 Wine Gallons.

Suppose the Drip or Fall to be 1.2 Inches, or 4 Gallons; then the whole Depth of the Back, exclusive of the Drip, will be 58.8. Then make 3.21 Gallons, the Area at the Top, to be the common Area for the first 20 Inches; 3.68 Gallons the common Area for the next 20 Inches; and 4.124, the common Area for the remaining 18.8 Inches.

Then the Content will be found as follows:

3.21, the Top Area, multiplied by 20, gives —64.20
3.68, the Middle Area, multiplied by 20, gives —73.60
4.124, the Bottom Area, multiplied by 18.8, gives —77.5312

Net Depth 58.8, Content 215.3312

To which add the Drip 1.2, ———— 4

Whole Depth 60.0, and Con. 219.3312

The Area of the Back at every Inch may be found as in the preceding Example; for 3.21 Gallons being an Area common to all the FIRST 20 Inches, you are to subtract it continually from the whole Content of the Tun, and the Remainder will be the Content at each of the 20 Inches; and then for the NEXT 20 Inches, you must take 3.68 Gallons, subtracting it as before; and for the REMAINING 18.8 Inches, you must take 4.124, and proceed in the same manner; by which Means a Table of the Content of the Back, at every Inch, may be readily constructed.

6. To

6. To gauge a Back or Cooler*.

See Plate IV. Fig. 3.

Definition.

Definition. A Back, or Cooler, is square or oblong, made of Wood, &c. about 6, 8, or 10 Inches deep, into which the boiling Wort is let out of the Copper, for more Expedition in cooling: Common Brewers have under Backs, that is, one under another.

Most Backs have their Sides straight; and in case the Sides be not straight, but make either an oblique or acute Angle with the Bottom, you must then be careful to take the true Length and Breadth in the Middle of every Inch in Depth, from whence the Area may be found upon every Tenth.

For finding the Area of the Back, observe

The RULE.

The Rule. Multiply the Length by the Breadth, and divide by 282, this gives the Content in Ale Gallons.

An Example. Let the Length AB be 120, and BC 86 Inches, what is the Area in Ale Gallons?

Operation.

Operation.

$$AB = 120$$

$$BC = 86$$

$$\underline{720}$$

$$960$$

$$282 \overline{) 10320.00} \quad (36.59 \text{ Ale Gallons.}$$

A Note.

When Brewers Wort, have lain some time in the Cooler, they have a considerable Settling, for which it is usual to allow one-tenth Part; which must be taken from the Area before it is tabulated.

By

* I would advise every Supervisor and Officer, when they first come into a new District or Division, to try an Experiment at several of their Viâuallers, by gauging of the Malt before it is wip, and also by gauging the Goods when drowed; by this it is probable they may come nearer the Truth, than by always keeping to the Divisors and Gauge Points above prescribed. For I have Reason to think, that different Malt, different Water, and People's different Management, will make some Alteration in the Rule above given.

Ch. XXIV. To gauge Open Vessels,

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By the Sliding Rule.

By the Sliding Rule.

A B A B

As 282 is to 120, so is 86 to 36.6 the Area in Ale Gallons.

Divisor Length Breadth

Take one Tenth of the Area, and reduce it into Barrels, Fir-
B.F. G.

kins, &c. = 0 0 3.659, which add continually, gives what the Back holds upon every Tenth of the first Inch deep, as in this Table; where the Area an-

B. F. G.

swering one Inch deep is 1 0 2.5916 = to 36.59 as found above; and thus you may proceed for the next Inch of Depth, and so on for the whole Depth = A E 9.5 Inches, which multiplied by the Area 36.59, produces 347.605 Ale Gallons, the whole Content of the Back, if it were placed parallel to the Horizon.

Depth.	Bar.	Fir.	Gall.
.1	0	0	3.659
.2	0	0	7.318
.3	0	1	2.477
.4	0	1	6.136
.5	0	2	1.295
.6	0	2	4.954
.7	0	3	0.113
.8	0	3	3.772
.9	0	3	7.431
1.0	1	0	2.590

Note, The whole Content may be found by the Sliding A Note. Rule, as in Page 93.

7. To find the true Dip of the Backs.

Because Backs are not placed level but sloping, for convenience of drawing off the Wort; therefore if you should dip in too deep a Place, you would wrong the Trader; and if in too shallow a Place, you would wrong the Revenue; to remedy which, take as many Dips as you think convenient, and add them all together, and divide them by the Number of Dips, which will give a mean Depth; when this is done, you must make Trial in many Places of the Back, till you find a Dip that answers your mean Depth; as suppose at D, right against it on the Side of the Back make a Mark, or Notch, with a Knife, and let that be your constant dipping Place.

Of the Dip of the Backs.

Example. Suppose I take as many Dips as per the Figure on Plate IV. Fig. 8. and add them together, they will stand as in the Margin. The Sum of these ten Dips is 29.5, which divided by 10, quotes 2.95 for a mean true Depth,

Depths.	Inches.
2.7	}
3.1	
3.4	
2.8	
3.2	
3.3	
3.0	
2.6	
2.5	
2.9	

10) 29.5 (2.95

The Officer ought to be very careful in ascertaining the true dipping Place of the Back, for by reason of the Largeness of their Areas, a little Error in the Depth will make a considerable Error in the Content; for which reason, they ought not only to be

To gauge Open Hells. Part I.

be inched, but also their Contents found to every Tenth of an Inch; which is called *Teuching* of a Back.

The Bottoms of common Brewers large Backs do generally warp after they have been a little time used; and become more and more uneven as they grow older, especially such as are not every where well and equally supported: Many of them are so large and uneven, that it is hardly possible to find a true Medium of the Depth of the Wort, without taking a very great Number of Depths: Besides, some are so situate, that it is difficult to take Depths in every Part where it may be necessary, and therefore it is a common Practice to take one Depth at a Place in the Back (close to the Side) which may be always most conveniently come at; then see all the Wort let down into a Tun, in which it may be exactly gauged, and (if the Dip taken in the Back doth not happen to be a mean one) mark on the Side of the Back such Addition or Abatement as will make the Gauge of the Wort in the Back, equal to the Gauge of the Wort in the Tun, which is called *setting a Back*, by seeing the Wort come down; and this is frequently done, because most large Backs are continually setting more one Way than another. Thus, for Instance, suppose the Dipping Place be found to dip .6 too much, then whenever any one dips at this Place .6 must consequently be subtracted from the Dip: And this as a Memorandum is to be put under the Dipping Place, in this Manner — 0.6: But if the same was to be added, it must be marked thus + 0.6. Besides, the Dimensions of large Backs (for want of a more proper Instrument) are generally taken with an inched Tape, which seldom is very exactly divided, besides the Alteration of the Weather affects the Length, and a very small Error in the Dimensions of such a large Vessel, causes a considerable one in the Area: But by setting the Back as above, there will be a Compensation in the Depth for any Error that may happen in taking the other Dimensions.

8. To gauge a Copper with a Rising Crown.

See Plate IV. Fig. 6.

Of Coppers with Rising Crowns. In London the common Brewers Coppers are all made with rising Crowns, which they tell you are made so, that the Liquor and Wort may boil the sooner.

How to take the Dimensions.

How to take the Dimensions.

1. Try if the Copper be perfectly round; then let two Assistants hold a Packthread right over the Middle from A to C, and take the Diameter A C, which I suppose to be 61 Inches.
2. Hang one Plumb Line at m, and another at n, take the Depths m F and n G each = 51 Inches.
3. Take the Distance A m = n C = 10.25, whose Sum 20.5 taken from A C = 61, there rests F G = 40.5, the Diameter of the Crown.

4. Now

Ch. XXIV. To gauge Open Vessels.

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4. Now to find the Content of the Copper from the Crown upwards, viz. the Part ACDE, the Depth BH being 39 Inches, find a Diameter in the Middle of every 4 Inches (for the more the better where the Copper is large) and place them with their Areas as in the following

T A B L E.

A Table.

Parts of the Depth.	Diameters.	Area in Ale Gallons	Content of every 4 Inches.
			B. F. G.
3	61.5	10.53	6 3 6.09
4	62.5	10.88	1 1 1.02
4	62.0	10.71	1 1 0.34
4	61.5	10.53	1 0 8.12
4	60.5	10.19	1 0 6.76
4	59.5	9.86	1 0 5.44
4	58.5	9.53	1 0 4.12
4	56.5	8.89	1 0 1.56
4	54.5	8.27	0 3 7.58
4	52.5	7.68	0 3 5.22
39	Sum	11 0 3.75	
To cover the Crown		1 0 2.907	
Content of the Copper		12 0 6.657	
How they are added, see Page 12.			

First, Place the Parts of the Depth; next, the Diameters in the Middle of every 4 Inches; then the Areas of those Diameters; and lastly, the Contents of every 4 Inches, reduced to Barrels, Firkins, and Gallons.

5. Multiply every Area by the Depth 4; and reduce the Products into Barrels, Firkins, and Gallons; only the top mean Area is taken in the Middle of 3 Inches; therefore it is multiplied by 3, and its Product reduced as before.

6. To find the Quantity of Liquor that will cover the Crown, that is, the Part FFHDGF. What Liquor will cover the Crown.

First, Find what the Frustum FEDGF will hold; and also the Content of the Crown FHGIF; it being gauged as the Segment of a Globe in Page 112; which Content being subtracted from the Frustum FEHDGF, will leave the Part FEHDGH, that is, what will cover the Crown.

See

See the Work.

1. For the Frustum FEHDF.

Operation for
the Frustum.
See Page 114.

$$\begin{array}{r} ED = 49.25 \\ FG = 40.5 \end{array}$$

$$\begin{array}{r} ED = 49.25 \\ FG = 40.3 \end{array}$$

$$\begin{array}{r} 24625 \\ 19700 \end{array}$$

$$\begin{array}{r} \text{Differ.} = 8.75 \\ \times 8.75 \end{array}$$

$$\begin{array}{r} 1994.625 \\ \times 3 \end{array}$$

$$\begin{array}{r} 4375 \\ 6125 \\ 7000 \end{array}$$

$$\begin{array}{r} 5983.875 \\ \text{Add } 76.5625 \end{array}$$

$$\begin{array}{r} 76.5625 \end{array}$$

$$\begin{array}{r} 6060.4375 \\ \times 12 \end{array}$$

1077.15) 72725.25000 (67.525 Ale Gallons.

See Page 112.

2. For the Segment of the Globe FHGIF.

Operation.

Operation for
the Segment of
the Globe.

$$\begin{array}{r} HI=12 \quad HI=12 \quad IG=20.25 \\ \times 3 \quad 12 \quad \times 20.25 \end{array}$$

$$\begin{array}{r} \text{Triple of } HI=36 \end{array}$$

$$\begin{array}{r} 144 \\ 12 \end{array}$$

$$\begin{array}{r} 10125 \\ 4050 \\ 4050 \end{array}$$

$$\begin{array}{r} \text{Cube of } HI=1728 \end{array}$$

$$\begin{array}{r} 410.0625 \\ \times 36 \end{array}$$

$$\begin{array}{r} 24603750 \\ 12301875 \end{array}$$

$$\begin{array}{r} 14762.2500 \end{array}$$

$$\begin{array}{r} \text{Cube of } HI \text{ add } 1728 \end{array}$$

538.575) 16490.25000 (30.618 A. G.

$$\begin{array}{r} \text{From FEHDF} = 67.525 \end{array}$$

$$\begin{array}{r} \text{Subtract FHGF} = 30.618 \end{array}$$

Remains FEHDFH = 36.907 which will cover the Crown.

The

Ch. XXIV. To gauge a Still.

143

The Copper may be inched by the same Method as inching the Tun in Page 127.

Note, The Quantity of Liquor that will cover the Crown, Another Way. may be found by this

R U L E.

From the Area of the Plane at the Top of the Crown, sub- Ward's Mathe-
tract $\frac{1}{3}$ of the Area of the Crown's Height, the Remainder mat. Page 443.
being multiplied into half the Height of the Crown, will
produce the Quantity or Number of Gallons that will cover
the Crown.

So $ED = 49.25$, Area 6.75 , and the Area of $HI = 12$ is
.4011, $\frac{1}{3}$ of which is .5348, subtract from 6.75 , rests 6.2152
which $\times 6$, that is, $\frac{1}{2}$ of HI , gives 37.2912 , differing only
.384 Parts of a Gallon from what is found above.

9. To gauge a Still.

See Plate IV. Fig. 7.

Stills are generally made with rising Crowns, as the Cop- Of a Still.
pers are, and must be divided into such Figures as (accord-
ing to your Judgment) you think they nearest approach to.
So in the Still before us, the Part ALB must be gauged as
the Segment of a Globe, the middle Part $EABF$, as the middle
Frustum of a Spheroid; and the lower Part (as in the Cop-
per) $GEFHG$ as a Parabolic Conoid.

E X A M P L E.

An Example.

Let $AB = 30.$
 $EF = 30.$
 $MK = 35.$
 $LM = 7.$
 $MI = 29.5$
 $IK = 5.5$
 $GH = 23.$
 $CD = 39.$ } Inches.

How many Wine Gallons will the Still hold ?

1. For the middle Frustum $EABFE$ taken as the middle For the middle
Frustum of a Spheroid. Frustum.

The R U L E.

To twice the Square of CD , add once the Square of AB , The Rule.
multiply the Sum by MI , and divide the Product by 882.354
(that is, three times 294.118) and the Quotient is the Content
of that Part in Wine Gallons.

See

See the Work.

The Operation.

$$CD = 39$$

$$\times 39$$

$$\hline$$

$$351$$

$$117$$

$$\hline$$

$$\text{Square} = 1521$$

$$\times 2$$

$$\hline$$

$$\text{Double} = 3042$$

$$\text{Square of AB add} = 900$$

$$\hline$$

$$3942$$

$$MI = 29.5$$

$$\hline$$

$$19710$$

$$35478$$

$$7884$$

$$\hline$$

$$882.354) 116289.00000 \text{ (131.79 Wine Gallons.)}$$

2. For ALBM, as the Segment of a Globe.

Operation.

Operation for
the Segment of
a Globe.

$$LM = 7 \quad LM = 7 \quad \text{Half AB} = 15$$

$$7$$

$$3$$

$$15$$

$$\hline$$

$$\hline$$

$$\hline$$

$$49$$

$$21$$

$$75$$

$$7$$

$$15$$

$$\hline$$

$$\hline$$

$$\text{The Cube } 343$$

$$225$$

$$21$$

$$\hline$$

$$225$$

$$450$$

$$\hline$$

$$4725$$

$$\text{The Cube of LM add} = 343$$

$$\hline$$

$$441.177) 5068.000000 \text{ (11.48 Wine Gallons.)}$$

3. For

CH. XXIV. To gauge a Still.

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3. For the Part EIFHIG, viz. what will cover the Crown.

See the Rule at Bottom of Page 143.

See the Work.

EF = 30 its Area in Wine Gallons 3.05
IK 5.5 its Area = .102, $1\frac{1}{2}$ of its Area .137

Operation for the Crown.

Remains 2.913
Half of IK = 2.75

14565
20391
5826

Will cover the Crown EIFHIG = 8.01075

Add { ECABDF = 131.79
ALBA = 11.48

The Content of the Still = 151.28075 Wine Gallons.

When the Still is so large, that the Sliding Rule will A Note. not reach the Diameters, then you must take them with your Sliding Cane; and the most exact Way is to take the Area at every Inch of the Depth, in Wine Gallons, the Sum of these Areas gives the true Content of the Still.

Note, The common Rule made use of in London for gauging Stills, was to measure the Globical Segment, or Part ALBA, by this

R U L E.

To Twice the Square of the Diameter of the End add once The Rule. that Square; multiply their Sum by the Height of the Frustum, and that Product by .2618, divide this last Product by 441.177, and you have the Content in Wine Gallons. Then the Body or remaining Part ABFE, by the Cross Diameters of the Middle of every 6, 8, or 10 Inches, whose mean Areas being multiplied by their respective Depths, will give as many Cylinders as there are Number of Diameters taken; the Sum of these Cylinders, added to the Globical Segment above, and also to what covers the Crown, gives the Content of the Still in Wine Gallons.

Example. In Page 144. I have found the Content of the Part of the Still ALBA to be 11.48 Gallons, let us see how this Rule will answer.

PART I.

L

Operation.

The Operation.

Operation.

$$\begin{array}{r} AB = 30 \\ \times 30 \\ \hline \end{array}$$

$$\begin{array}{r} \text{Square } 900 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 1800 \\ + 900 \\ \hline \end{array}$$

$$2700$$

$$M = 7$$

$$\begin{array}{r} 18900 \\ \text{Common Factor } .2618 \\ \hline \end{array}$$

$$151200$$

$$18900$$

$$113400$$

$$37800$$

441.177) 4948.0200 (11.21 *Wine Gallons.*
Too little by .27 Parts of a Gallon.

But if you would be more exact in the gauging of Stills, consider well *Fig. 6, 7, and 8, of Plate VI.* which represent three Stills of different Forms: And carefully attend to the following Method of gauging them; as it was practised by *Mr. Bosley's Method of gauging Stills.* the late ingenious Mr. JOSEPH BOSLEY, who was General Surveyor of the London Distillery for near thirty Years.

10. To gauge a Still more accurately.

See *Fig. 6. Plate VI.*

How to take and write down the Dimensions. Take a Line, or a Piece of Packthread, and extend it from one Side of the Collar to the other; then with your Rule take the Depth of the Still from the Center of the Crown or Bottom at Z, to the Line AB at Y, which will be 109.8 Inches to the Depth of the Still. Then take the Line, and extend it from C to D, (keeping your Rule still fixed) and look on the Rule, where the Packthread touches, and it will be at 83.5, which subtract from the whole Depth 109.8 Inches; and the Remainder will be 26.3 Inches to OY, the Depth of the Segment of the Globe. This done, take a Nail, and hold it firm at the Point Z; and with a Packthread (taking the Nail for the Center) describe a Circle, with a Bit of Chalk held at the End of the Thread: Quarter the Circle, extending the Lines that quarter it, till they reach to the Sides of the Still; and from the Ends of those Lines raise Lines up the Sides of the Still, as perpendicular

Ch. XXIV. To gauge a Still.

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cular as the *Sides* of the Still will permit, as high as the *Segment Line* CD; and upon those raised Lines, in the *Middle* of every 10 *Inches*, make a *Mark* with your *Chalk*, as at E F, G H, I K, L M, N O, P Q, R S, T V, which gives you 8 *Diameters*, (by Reason the *Depth* from O to Z is 83.5 *Inches*;) so that 7 of the *first Diameters Areas* are to be multiplied by 10, and the *last Area* by 13.5 *Inches*, which makes the *whole Depth* 83.5 : * And when you take the *Diameters*, write them down as follows :

<i>Inches.</i>	The <i>Cross Diameters</i> in <i>Inches.</i>	The <i>Cross Diameters</i> in <i>Inches.</i>	Mean <i>Diameters</i> in <i>Inches.</i>	Mean <i>Areas</i> in <i>Wine. Gallons.</i>	<i>Inches.</i>	<i>Contents</i> of the <i>several Depths</i> in <i>W. Gall.</i>
26.3	AB=45	(The <i>Collar.</i>)	45.	6.88		
	CD=134.7	(The <i>Segment of the Globe.</i>)	134.7	61.71		is 1141.42
0	E F=139.8	ef=140.7	140.25	66.90	× 10	is 669.00
0	G H=148.	gb=148.9	148.45	74.957	× 10	is 749.57
10	I K=153.5	ik=153.7	153.6	80.248	× 10	is 802.48
10	L M=155.	lm=155.5	155.25	81.981	× 10	is 819.81
10	N O=154.7	no=155.6	155.15	81.875	× 10	is 818.75
10	P Q=153.6	pq=154.7	154.15	80.823	× 10	is 808.23
10	R S=150.1	rs=150.3	150.20	76.734	× 10	is 767.34
13.5	T V=142.5	tv=141.8	142.15	68.73	× 13.5	is 927.85
The <i>Altitude of the Crown</i> XX.XX.=						
to 12 <i>Inches.</i> WX=134.5 wx=133.9 134.20 61.25 × 6 is 367.50						
109.8 The <i>Depth</i> of the Still.						
The <i>Content</i> of the Still } in <i>Wine Gallons.</i> }						7871.95
L 2						To

* The *Contents* of these *large Stills* cannot conveniently be found without getting into them, and having 2 or 3 to assist in taking their *Dimensions* : And the usual Way of raising the *FOUR perpendicular Lines* up the *Sides* of the *Still*, from the *Ends* of those *Lines* that quartered the *Bottom* of it, is by extending a *Line* from A at the *Collar* to the *Lower XX*, at the *Bottom*, of *Fig. 6*. Then let the *Assitant* (without the *Still*) at the *Collar*, and the other *Assitant* (within the *Still*) at the *Bottom*, keep that *Line* exactly so extended, holding it very tight ; whilst you (having ready a straight *Stick* with a *Bit* of *Chalk* fixt in a *Slit* at one *End* of it) draw the *Line* up the *Side* of the *Still*, from the *Lower XX*. to W. T. R. and so on to A ; guiding the *Stick* by the *Side* of the *Line*, extended from A. to the *Lower XX*. as aforesaid : And after the same manner you may with Ease draw the like *Lines* up the *three other Sides* of the *Still*, from the *Ends* of those *Lines* that quartered the *Bottom* of it, with sufficient *Exactness*. The *Bottoms* and *Sides* of the *Stills* marked 7 and 8, are to be quartered, &c. by the same *Method*.

Upon a strict Examination it will be found that *Stills* of all *Sizes* are seldom or never made truly *Round*, more especially *large Ones* : And therefore, those who would gauge, or find the *Contents* of such *Stills*, with *Exactness*, are necessitated to quarter them, and to take *Cross-Diameters* to rectify this *Inaccuracy* of the *Copper-Smith*.

N. B. These *Stills* marked *Fig. 6*, 7, 8, in *Plate VI.* facing *Page 152*, are not *Stills* of *Imaginary Dimensions* and *Contents* ; but represent real *Stills*, actually used in and near *London*, at this *Day*, and have been so for several *Years* last past.

Of the Segment. *To find the Content of the Frustrum ABDC of the Globe.*

The Rule.

To once the Area of the Collar AB, add twice the Area of the Segment CD; and that Sum multiplied by one Third of the Depth (YO = to 26.3 Inches,) the Product will give the Content of the Collar and Segment = 1141.42 Gallons. The Areas are found by squaring the Diameters, and dividing by 294, the circular Inches in a Wine Gallon.

The Operation.

Operation.

AB = to 45 The Diameter of the Collar.

× 45

225

180

294) 2025 (6.88 Gallons = to the Area of the Collar.

CD = to 134.7 The Segment of the Globe.

× 134.7

9429

5388

4041

1347

294) 18144.09 (61.71 Gallons = to the Area of the Segment.
Gallons.

06.88 = to the Area of the Collar.

123.42 = to twice the Area of the Segment.

130.30

Multiply by 8.76 = to one Third of 26.3 Inches, the Depth of the Segment.

78180

91210

104240

1141.4280 Gallons = to the Content of the Frustrum of the Globe.

To find the Content of the several Parts, according to their Depths and Diameters.

Add the Diameter EF=to 139.8 Inches, and ef=to 140.7 To find the Inches together; Half that Sum will give 140.25 Inches; for Contents. the mean Diameter; which squared, and divided by 294 (the Circular Divisor for Wine Gallons) quotes 66.9 Gallons=to the Area; this multiplied by 10, gives 669.0 Gallons for the Content of the first 10 Inches. See the Work itself.

The Operation.

Operation.

$$\begin{array}{r}
 \text{Inches.} \\
 140.25 = \text{to the mean Diameter,} \\
 \times 140.25 \\
 \hline
 70125 \\
 28050 \\
 561000 \\
 14025 \\
 \hline
 294) 19670.0625 \quad (66.9 \text{ Gallons} = \text{to the Area of the Dia-} \\
 \quad \times 10 \quad \text{meters of the first 10 Inches.} \\
 \hline
 669.0 = \text{to the Content of the first 10 In.}
 \end{array}$$

In the same Manner you are to find the 6 other mean Diameters Areas, and when each Area is found, and multiplied by 10, it will be the Content in Gallons, which Place as directed on Page 147; but when you come to the Diameters TV and *tw*; you are to multiply the mean Area of those by 13.5, as appears by the Dimensions, and the Product will be 927.85 Gallons, as before entered.

The Method commonly made use of to find the Content of the Crown or Bottom, is by covering it with Water out of a regular Vessel. But to gauge it, add together the Diameter WX=to 134.5 Inches, and *wx*=to 133.9 Inches, Half that Sum being squared, and the Product divided by 294 (the circular Inches in a Wine Gallon) will give the Area; which multiply by Half the Altitude XX and XX=to 6, and you have the Content of the Bottom or Crown of the Still=367.5 Gallons. See the Work.

Operation.

The Operation. $WX =$ to 134.5 Inches. $uv x =$ to 133.9

 268.4

 134.2 $=$ to Half the two Diameters, which is the
 $\times 134.2$ [Mean Diameter.

2684

5368

4026

 1342

294) 18009.64 (61.25 $=$ to the Area. $\times 6 =$ to Half the Altitude XXXX.

 367.50 $=$ to the Content of the Bottom or Crown
 of the Still in Wine Gallons.

By adding together all these several Contents, the Still is
 found to contain 7871.95 Wine Gallons. See the Work on
 Page 147.

To find the
Liquor.

To find what Quantity of Liquor is in the Still at
 30 Inches dry from the Collar AB, to the Sur-
 face of the Liquor.

The RULE.

The Rule.

Subtract 30, the Dry Inches from the Still's Depth 109.8
 Inches, and the Wet Inches will be 79.8 Inches.

Operation.

Gallons.

The Operation. The Content of the Crown or Bottom is

 367.50
 Inches.

The first Content from the Crown at 13.5 is

 927.85The second Content from the Crown 10.0 is

 767.34The third Content from the Crown 10.0 is

 808.23The fourth Content from the Crown 10.0 is

 818.75The fifth Content from the Crown 10.0 is

 819.81The sixth Content from the Crown 10.0 is

 802.48The seventh Content from the Crown 10.0 is

 749.57

To make up the Wet Inches 79.8 } 73.5
 I add

 06.3 is

 421.47

 $=$ To the Wet Inches 79.8 Content 6483.00

By

Ch. XXIV. To gauge a Still.

151

By the above *Work*, it appears, that there is in the Still 6483.00 Gallons of Liquor and the Method to find the Liquor at 6.3 Inches, is by multiplying the Area 66.90 Gallons by 6.3, and the Product 421.47 Gallons is what Quantity of Liquor the Still contains at 6.3 Inches. See the Work.

Operation.

The Operation.

$$\begin{array}{r} 66.90 = \text{to the Area.} \\ \times 6.3 = \text{to the Depth.} \\ \hline 20070 \\ 40140 \\ \hline 421.470 = \text{to the Content at 6.3 Inches.} \end{array}$$

A second Way to find what Quantity of Liquor is in the Still, at 40 Inches dry, from the Collar A B, to the Surface of the Liquor.

Take the Depth of the Segment (see Page 147) which is 26.3 Inches, and add to it 3.7 Inches, to make the Dry Inches 30, then look in the same Page, for what the Still will hold at 26.3 Inches, which you find will be 1141.42 Gallons; and on the same Page, look for the mean Area against the next 10 Inches, which you will find to be 66.90 Gallons, which multiply by 3.7 Inches, that Product will be 247.53 Gallons, which added to 1141.42 Gallons, make 1388.95 Gallons to fill the Still, as follows:

Inches.		Gallons.
26.3 = to the Segment, is	_____	1141.42
3.7 = to the Dry Inches, to make it 30	_____	
	_____ = multiplied by 66.90, produces —	247.53
30.0		
		Gallons 1388.95

So that to fill the Still at 30 Inches dry, will require 1388.95 Gallons, which subtract from 7871.95 Gallons, and it will appear that the Still contained 6483 Gallons = to the Quantity of Liquor in the Still, at 30 Inches dry, as found by the other Method above.

Note, The other two Stills, see Figures 7 and 8, of Plate VI. are gauged, and the Contents found, in the same Manner as the Still, Fig. 6. already explained; and are inserted to shew the different Forms that Stills are made in, and also with a View to exercise the Ingenuity of the young Gauger, in finding out their Content.

☞ In Figure 7, the first 4 Diameters, (which are taken in the Middle of every 10 Inches) EF, GH, IK, and LM, are taken, (and their Contents found) as taught in Still, Fig. 6. But the Diameter PQ, lying neither parallel with NO, nor with RS, occasions the Angles N and O (at the Top of the Bench,) to be acute; and the Angles x and Q, (at the Bottom of the Bench,) to be obtuse. Therefore to find a mean Diameter betwixt NO and x Q, I take Half the Distance from N to x, which is at the Point P; and from the Point P to the Point Q, is the mean Diameter betwixt N O and x Q. And then I proceed to take the other Diameters (which are also to be taken in the Middle of every 10 Inches) RS, TV, WX, YZ, and a b; and to find their Contents: And also the Content of the Bottom or Crown, as already directed in the Still, Fig. 6.

N. B. If the Still should not be a true Ellipsis, but an Irregular Figure, recourse must be had to the Method laid down on Page 87, which is accommodated to all Curves in general: And this is undeniable, because it entirely depends on the Ordinates themselves, and their common or equal Distance from one another: Therefore where the Property of the Curve is not known, the Ordinates cannot be found otherwise than by actual Mensuration.

CHAP. XXV.

Of CASK * GAUGING.

See Plate IV. Fig. 3, 4, 5,

Of Cask Gauging.

THIS is the most difficult Part of Gauging, because no general Rule can be prescribed to find the true Content of all sorts of Casks, by reason of the Uncertainty of their Curvature. But before we consider the different Forms of Casks, it will be necessary to shew the practical and most correct Methods of taking their Dimensions. When Casks are full, you can seldom attain all their Dimensions. In a standing Cask, the Bung Diameter is the most difficult to be attained; and in a lying Cask, the Length.

The RULE for taking the Dimensions of a Cask LYING.

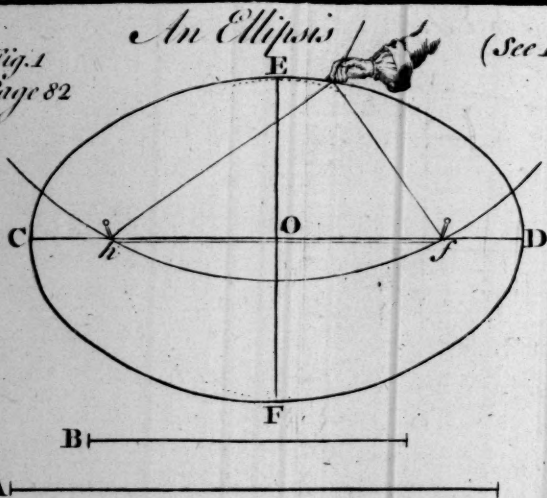
For a Cask lying.

Take the Head-Diameter, close to its Out-side, and add for small Casks 3 Tenths; for Casks of thirty, forty, or fifty Gallons, 4 Tenths; for larger Casks 5 or 6 Tenths of an Inch; and the Sum is very near the Head Diameter within.

In taking the Bung Diameter, observe, by moving the Rule to and fro, whether the Staff, (or Stave) opposite to the Bung, be thicker,

* See also CHAP. XX. PART II.

Fig. 1
Page 82



(See Plate 2 Fig. 1)

Fig. 2

An Ellipsis

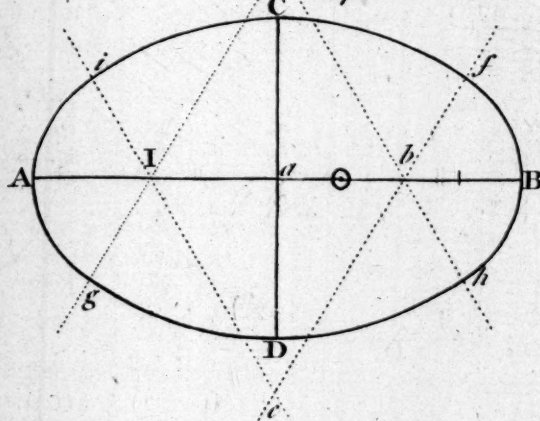


Fig. 3

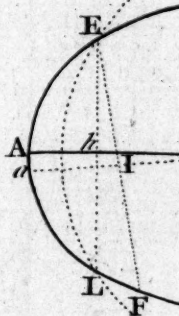
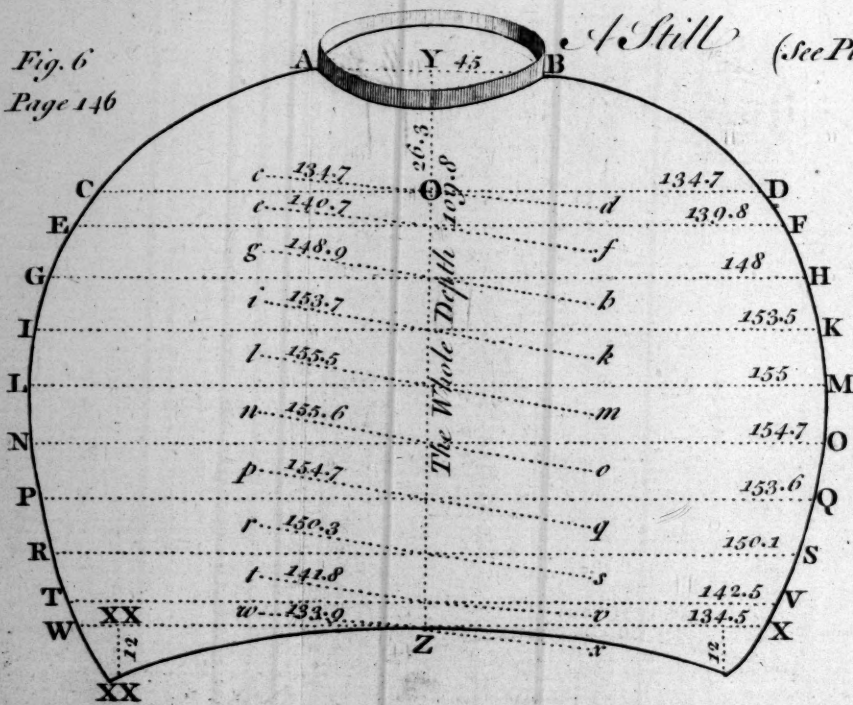
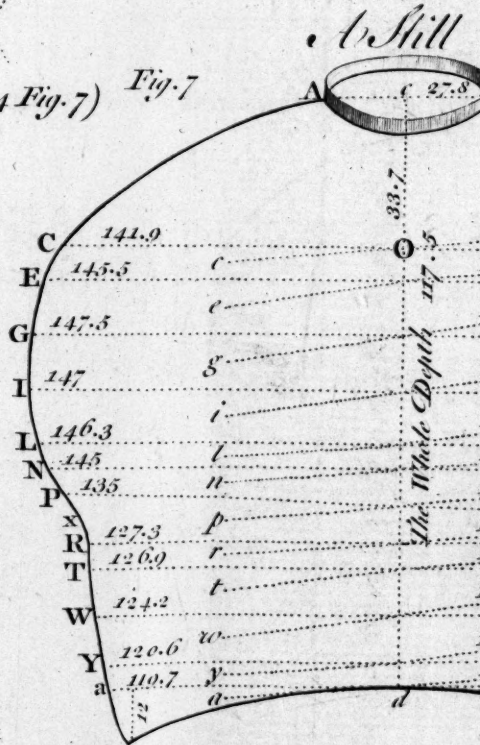


Fig. 6
Page 146



(See Plate 4 Fig. 7)

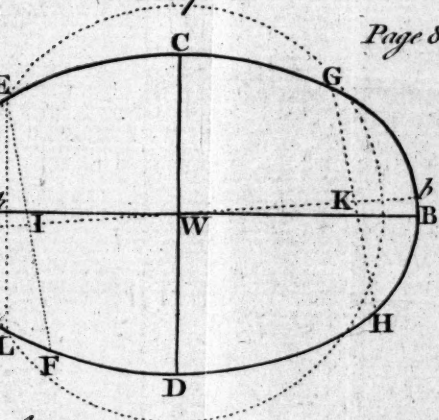
Fig. 7



To fold out facing page 152.

An Ellipsis

Page 83



Still

Page 151

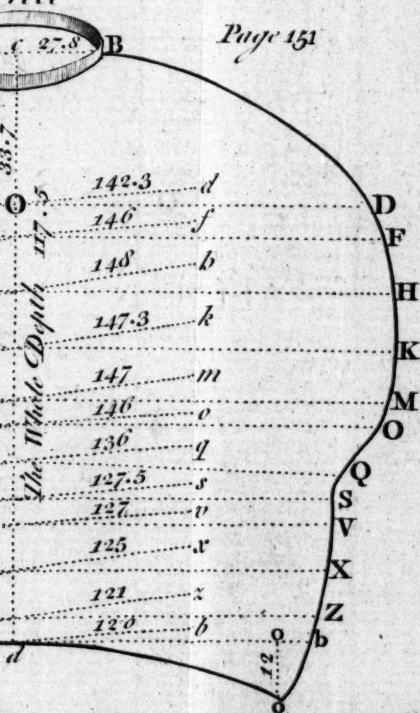
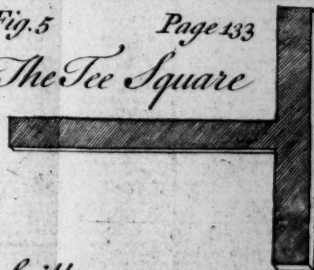


Fig. 5

Page 133

The Tee Square



A Still

Fig. 8

Page 151

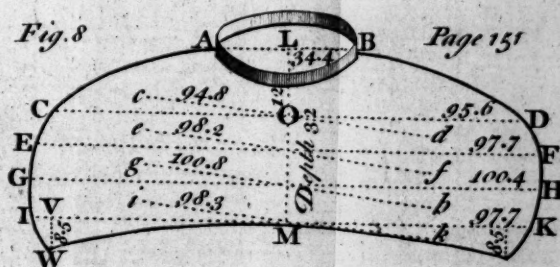
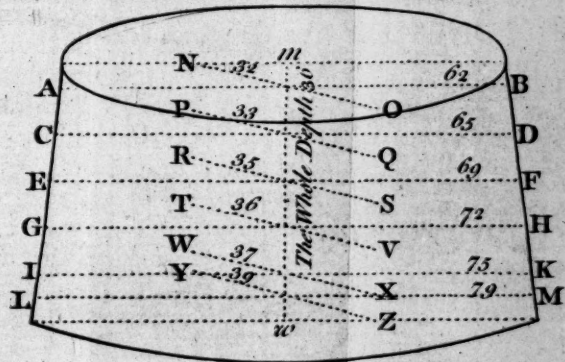


Fig. 4

Page 133

A Distiller's Back



...the ...
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or thinner than the rest ; and if it be, make an Allowance accordingly. The Length is most commodiously taken with Callipers made for that Purpose, allowing for the Thickness of both Heads 1.0, or 1.5, or 2.0 Inches, according to the Size of the Cask, But if you have no Callipers, do thus : Measure the Length of the Staff ; then laying a Rule across each Head, measure the Depth of the Chimes ; which, together with the Thickness of the Heads, being subtracted from the Length of the Staff, leaves the Length within.

The RULE for taking the Dimensions of a Cask STANDING.

The Head is to be taken as of the lying Cask ; the Bung Diameter is best taken thus : Lay one Side of a Square over the Chimes of the Cask, that the other may just touch the Bung of the Cask. (A Square of this Sort may be had of Mr. Gilbert, mathematical Instrument Maker on Tower-hill*) then observe what each Chime of the Cask cuts on the Square, add the Inches and Tenths, which the Chime OPPOSITE the Square cuts, to the Inches and Tenths, which the NEARER Chime cuts ; and from the Sum subtract TWICE the Thickness of the Bung-Staff, viz. 0.8, or 1.0, or 1.2, or 1.4, or 1.6, according to the Size of the Cask.

The Length is to be taken with the same Caution as the Bung Diameter in a LYING Cask.

Casks being of various Curvatures, Gaugers do usually suppose every Cask to be in some one of these following Forms. [See also Pages 177, 178, and 179.]

- Viz. {
1. The middle Frustum of a Spheroid.
 2. The middle Frustum of a Parabolic Spindle.
 3. The lower Frustums of two equal Parabolic Conoids.
 4. The lower Frustums of two equal Hyperbolic Conoids.
 5. The lower Frustums of two equal Cones.

1. Now to have a true Notion of these several Casks, view First Variety. Plate 4. Fig. 3. and Plate 5. in which the outmost Lines, which represent the Staves, are very much curved or arching. This represents a Cask of the first Variety, and is what is called the middle Frustum of a Spheroid, and consequently will hold more than a Cask of any of the other Forms.

2. The

* This Instrument is composed of two Pieces of Mahogany, each being about 38 Inches long, $2\frac{3}{4}$ Broad, and $\frac{1}{2}$ an Inch Thick, and fastened together by a brass Joint, so that when shut it is very portable, and when it is open it forms the Square. See Plate I. Fig. 25. and 26 ; where Fig. 25 represents it open, and Fig. 26 represents it shut. When open it is fixed steady by means of a small Pin, at b ; and when shut the Legs are fastened together by a small Hook and Eye, at c. And that the Reader may not find any Difficulty in applying the Square, we have given a Representation of it on Plate 5, where ABC is the Square applied to the Cask, in the manner it is to be made use of in taking Dimensions.

But if the young Gauger has not such a Square, he may find the Bung Diameter of a standing Cask by the following Method: Lay a Rule over the Center of the Head on the Chimes of the Cask, and near the End of the Rule fasten a Line and Plumb-line ; move the Rule till the Plumb-line just touches the Cask at the Bung : Then will the Distance intercepted between the Plumb-line and the Center of the Head, be equal to Half the Bung Diameter, the Thickness of the Staff being subtracted, as above directed. See Plate 5, where DEF represents the Rule lying on the Chimes of the Cask, (which is supposed to be standing on its Head) and gG a Plumb-line fastened to the Rule, and just touching the Cask at H the Bung. Now it is evident that the Distance gE is equal to HI, half the Bung Diameter including the Thickness of the Staff, which being subtracted from it, we shall have HALF the Bung Diameter of the INSIDE of the Cask.

Second Variety. 2. The next curved Line within that I have been speaking of, represents a Cask of the second Variety; and its Contents will be less than that of a Spheroid: This is called the middle Frustum of a Parabolic Spindle.

Third Variety. 3. The lower Frustum of two equal Parabolic Conoids is the next curved Line; and holds less than the second Variety, as is easy to conceive. This is called a Cask of the third Variety.

Fourth Variety. 4. The fourth Variety, which is the lower Frustum of two equal Hyperbolic Conoids. The Staves of such a Cask are more straight, and consequently the Cask holds less than any of the other three before-mentioned. This is not represented in the Figure, because it would be too much crowded; but will be found in Plate 5.

Fifth Variety. 5. A Cask in the Form of two equal Cones, abutting on one common Base, is represented in Plate 5, by the innermost Line, which is perfectly straight from Head to Bung; that is, from A to B, or from B to I. This Cask, of all others, holds the least.

N. B. Some Writers have treated of another Variety of Casks, viz. the Hyperbolic Spindle, which has its Staves a little less curved than the Parabolic Spindle, and consequently a Cask of that Form will hold less than those of the first and second Variety. How to gauge or find the Contents of a Cask of this Form, shall be shewn farther on.

But as it is difficult, even for expert Gaugers, to determine the Form of the Cask by the Eye, we shall lay down the following Method, by which the true Form of any Cask may be found.

THE METHOD.

Make a Mark exactly at the Middle of the Bung-staff, lay the Square over the Chimes to touch the Mark, and observe the Distance from the Chimes to this Mark at the Bung; then at half that Distance from the Chime, measure with a Rule the Distance of the Side of the Square from the Staff, holding the Rule parallel to the upper Side of the Square; then divide that Distance, by the Distance the Chime cuts on the Side of the Square, and if the Quotient be about .23 the Cask is of the FIRST Variety; if about .28 of the SECOND Variety; if about .34 of the THIRD Variety; if about .42 of the FOURTH Variety.

Example. Suppose the Bung Diameter of a Cask be 31 Inches, the Head Diameter 25 Inches, and the Length 46 Inches: And that laying the Square over the Chimes, the Square touches the Chimes, at 3.5 Inches, and exactly at half Way, between the Chime and the Mark at the Bung, the Distance from the Side of the Square from the Staff is .8, I demand the Form of the Cask?

Here the Distance from the Side of the Square to the Staff is .8, which divided by 3.5, quotes .22, which being near .23, it may be concluded that the Cask is the Frustum of a Spheroid or Cask of the First Variety.

The first, second, and third Varieties of Casks are put upon one Edge of the Sliding Rule. (See Plate A. Fig. 4.) Their Use will be more fully shewn in its proper Place.

And

And now if you refer to *Plate III.* you will see the Form of each particular *Cask* represented in a Figure by itself.

1. If the *Spheroid* ADECA (*Fig. 1. Plate III.*) be cut by a Plane TV (*parallel to CD*) passing through W the middle of IB, the Content of the Segment TBV is to the Content of a Cylinder, whose Base is TV, and Altitude WB, as 5 to 9; therefore the Area of the Base TV, multiplied by five Nines of WB, gives the Content of the Segment TBV.

2. If the *Spheroid* be cut as above, the upper Segment TCEAFDV is equal to a Cylinder, whose Base is TV, and its Altitude WA; therefore the Area of the Base TV, multiplied by the Altitude WA, gives the Content of the Segment TCEAFDV. Wallis's Algebra, Page 312.

3. To describe a *Spheroid*, (*Plate III. Fig. 1.*) the middle Frustrum of which shall represent a *Cask* of the first Variety, whose Bung Diameter CD is 31 Inches, the Diameters at the Head EF and GH each 24 Inches, and the Length RS 32.5; also to find the Content in Ale and Wine Gallons. To describe the Spheroid.

From the Square of CD, the Bung Diameter, subtract the Square of EF, the Head Diameter. Then,

As that Difference = 385

Is to the Square of CD 961

So is the Square of IR 264.0625

To the Square of IA 659.1274

The Square Root of which is 25.67, the Semi-Axis of the *Spheroid*.

1. With which, as a Radius, describe the Circle KALB.

2. Draw the Line KL.

3. And from the Point I, set off half the conjugate Axis or Diameter 15.5 to C and D.

4. Also set Half RS = 16.25 from I to R and S.

5. Draw Lines through R and S parallel to CD, viz. MN and GH.

6. Draw OQ parallel to CD; join IO and IM; I* say, IM squared—IRq = MRq. And as IK is to IC; so is MR to ER: This will hold wherever R be taken; and hence as many Points P, E, &c. as you please may be determined.

An Illustration by Numbers.

IK

IC

MR

ER

As 25.67 is to 15.5, so is 19 to 11.47; this ER falling so near the Head Diameter, I make ER to serve for this Line, as well as for the Head Diameter, which I make 24, and KI = MI = AI = 25.67, doubled, gives AB the whole Axis of the *Spheroid*. Illustration by Numbers.

* By the 47th Proposition of the First Book of Euclid's Elements, it is proved in the Triangle MRI, that the Square of IM is equal to the Square of IR and RM, by which MR is easily found to be 19. Fare.

Spheroid. And if from AI 25.67 you subtract IR 16.25, half the Cask's Length, there remains AK = SB = 9.42.

How to gauge *Spheroidal Casks.* Now to find the Content of the Spheroid GCEFDH, this is

The RULE.

The Rule. 1. To the Sum and half Sum of the Squares of the Bung and Head Diameters, add half the Difference of the said Squares; the Sum of these multiplied by the Length, and the Product divided by 1077.15 for Ale, and by 882.354 for Wine, gives the Content respectively.

An Example. Example. Let the Dimensions be as above, I demand the Content in Ale and Wine Gallons?

The Operation,	Operation.	
	CD 31	EF 24
	31	24
	<hr/>	<hr/>
	31	96
	93	48
	<hr/>	<hr/>
	The Square of CD 961	Square of EF 576
	Square of EF 576	
	<hr/>	
	The Sum 1537	
	The Half Sum 768.5	
	$\frac{1}{2}$ Difference of the Squares 192.5	
	<hr/>	
	The Sum of all Three 2498,	
	The Cask's Length 32.5	
	<hr/>	
	12490	
	4996	
	<hr/>	
	7494	
	<hr/>	
Ale.	1077.15) 81185.0000 (75.37 Ale Gallons,	
	
Wine.	882.354) 81185.00000 (92.01 Wine Gall.	
	

Or,

According to BAMFORD, Page 85.

$$\square 31 = 961 \quad \square 24 = 576$$

$$\begin{array}{r} 961 \\ 576 \\ \hline \end{array}$$

$$2498 \times 32.5 = 81185. \text{ as above.}$$

Or,

Or,

2. To Twice the Square of the Bung Diameter, add once *Another Rule:*
the Square of the Head Diameter, multiply the Sum by the
Length of the Cask within, and divide the Product as before
for Ale and Wine Gallons.

Example. Let the Dimensions be as above, I demand the An Example.
Content in Ale and Wine Gallons?

Operation by Rule 2.

$$\begin{array}{r} CD = 31 \\ 31 \\ \hline 31 \\ 93 \\ \hline \end{array}$$

$$\begin{array}{r} EF = 24 \\ 24 \\ \hline 96 \\ 48 \\ \hline \end{array}$$

The Operation.

$$\begin{array}{r} \text{The Square } 961 \\ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 576 \end{array}$$

$$\begin{array}{r} \text{Twice the Square } 1922 \\ EF \text{ squared} = 576 \\ \hline \end{array}$$

$$\begin{array}{r} \text{The Sum } 2498 \\ \text{The Length} = RS \ 32.5 \\ \hline \end{array}$$

$$\begin{array}{r} 12490 \\ 4996 \\ 7494 \\ \hline \end{array}$$

$$1077.15) \ 81185.0000 \ (75.37 \text{ Ale Gallons.}$$

Ale.

$$882.354) \ 81185.0000 \ (92.01 \text{ Wine Gallons.}$$

Wine.

By the Sliding Rule.

Multiply the Difference between Head and Bung always by .7.
(or more correct by .697, to make it agree with the Sliding By the Sliding
Rule,) that Product added to the Head Diameter gives a mean Rule.
Diameter, which reduceth the Cask into a Cylinder: so the Dif-
ference between the Head and Bung, which is 7, being $\times .7$
and added to 24 gives the mean Diameter required = 28.9.

Or,

Look upon one Edge of the Sliding Rule for 7, the given
Difference, and right under it you will find 4.9 nearly, to be
added to the Head Diameter; then on the Lines C and D.

D C D C

As 18.94 is to 32.5 so is 28.9 to 75.37 Ale Gallons.

As 17.14 is to 32.5 so is 28.9 to 92.01 Wine Gallons.

Gauge Pt. Length Mean Content

Ale.

Wine.

But

But the *mean Diameter*, and consequently the *Content* of this Cask, may be found more expeditiously thus.

The R U L E.

The Rule.

To the Head Diameter add two-Thirds of the Difference of the Head and Bung, and to this add one Third of the Quotient arising from dividing the Square of the Difference of the Diameters, by the Sum of the Head, and twice the Bung, gives the mean Diameter sought.

An Example.

Example. Let the Bung Diameter be 31, and Head 24 Inches; what's the mean Diameter?

Operation.

Operation.

$$\begin{array}{r} \text{Head } 24 \\ \frac{2}{3} \text{ of } X \ 7 = 4.66 \\ \frac{2}{3} \text{ of } .57, \text{ viz. } 49 \div 86 = .19 \end{array}$$

$$\text{Mean Diameter} = 28.85$$

By Factor.

$$\begin{array}{r} .697 \\ X = 7 \end{array}$$

$$\begin{array}{r} 4.879 \\ 24. \end{array}$$

The Mean is nearly the same with the other 28.879

From hence the *Content* may be found as above.

N. B. Everard doth not mention the lower Frustrum of two Hyperbolic Conoids.

Everard's Dimensions of a Spheroid are	{ Bung 32 Head 24 Length 40	Bamford's Dimensions of a Spheroid are	{ Bung 34 Head 23.5 Length 44
--	-----------------------------------	--	-------------------------------------

Of the middle Frustrum of a Parabolic Spindle.

2. To gauge the middle Frustrum of a Parabolic Spindle.

See Plate III. Fig. 2.

1. To describe a Parabolic Spindle in Plano, the middle Frustrum whereof shall represent a Cask, whose Diameter at the Bung CD = 31 Inches; the Diameters at the Heads NP and QR are each = 24 Inches, and the Length 32.5 Inches.

It is laid down by this Proportion.

How laid down. As EB squared is to EF squared, so is EC to nm; then $Fm - nm = Fn$, and so of all the rest; through the Points thus found, draw the Curve, and it is done.

In Page 118, I have told you that a Parabolic Spindle is $\frac{8}{15}$ of its circumscribing Cylinder; then to gauge its middle Frustrum NCQDP, this is

The

The R U L E.

To twice the Square of the Bung Diameter, add the Square of the Head Diameter; from that Sum take four Tenths of the Square of the Difference between the Head and Bung Diameters; multiply the Remainder by the Length of the Cask within, and divide the Product by 1077.15 for Ale, and by 882.354 for Wine Gallons.

Example. Let the Dimensions be as above; I demand the Content in Ale and Wine Gallons? An Example.

Operation.

$$CD=31$$

$$31$$

$$\underline{\quad}$$

$$31$$

$$93$$

$$\underline{\quad}$$

$$\text{The Square } 961$$

$$\text{Multiply by } 2$$

$$1922$$

$$\text{Square of NP}=576$$

$$\text{The Sum } 2498$$

$$\frac{4}{10} \text{ Square Differ. subtract } 19.6$$

$$2478.4$$

$$\text{The Length}=OH=32.5$$

$$123920$$

$$49568$$

$$74352$$

$$1077.15) 80548.0000 \text{ (74.78 ferè Ale Gallons. Ale.)}$$

$$882.345) 80548.00000 \text{ (91.28 Wine Gallons. Wine.)}$$

The Operation.

$$CD=31$$

$$NP=24$$

$$\underline{\quad}$$

$$96 \text{ Difference } 7$$

$$7$$

$$\underline{\quad}$$

$$\text{Square } 49$$

$$\times .4$$

$$\underline{\quad}$$

$$19.6$$

By the Sliding Rule.

The Difference between the Head and Bung of this Cask being multiplied by .68, and its Product added to the Head Diameter, gives a mean Diameter, which reduces the Cask into a Cylinder. By the Sliding Rule.

Or,

On the Sliding Rule look for the Difference of the Head and Bung Diameters, and against it in the Second Variety is the Number to be added to the Head Diameter, as before. Therefore $7 \times .68 + 24 = 28.76$; now on the Lines C and D.

As

D	C	D	C		
As 18.94 is to 32.5	so is 28.76	to 74.78	Ale Gallons.	Ale.	
As 17.14 is to 32.5	so is 28.76	to 91.28	Wine Gallons.	Wine.	
Gauge Pt.	Length	Mean	Content		

Note, Some instead of the Factor .68, use .63, which is something nearer the Truth.

But the Content of this Cask may be found more expeditiously, by finding a mean Diameter thus.

The RULE.

The Rule.

To the Head Diameter, add two Thirds of the Difference of the Diameters, also four Thirtieths of the Quotient, arising from dividing the Square of the Difference of the Diameters by the Sum of the Head, and twice the Bung Diameter, this Sum is the mean Diameter sought.

Example. Let the Bung Diameter be 31, the Head Diameter 24 Inches; what is the mean Diameter? An Example.

Operation.

$$\begin{aligned}
 &\text{The Head } 24 \\
 &\frac{2}{3} \text{ of } X \ 7 = 4.66 \\
 &\frac{4}{30} \text{ of } .57 = .076 \\
 &\hline
 &\text{Mean} = 28.736
 \end{aligned}$$

$$\begin{array}{r}
 \text{By the Factors.} \quad \text{The Operation.} \\
 .68 \\
 7. \\
 \hline
 4.76 \\
 24 \\
 \hline
 28.76
 \end{array}$$

The Mean is nearly the same 28.76

3. To gauge the lower Frustum of two Parabolic Conoids.

Of the lower Frustum of two Parabolic Conoids.

See Plate III. Fig. 3.

This will be the best explained by delineating the Figure.
How to delineate a Parabolic Conoid.

Let GH the Bung Diameter, be = 31, IK = EF = 24, How to delineate and BD, the Length 32.5; what is the Content in Ale and Wine?

From the Square of GC, subtract the Square of ED, then say,

As that Difference

Is to CB, the Altitude of the Frustum;

So is the Square of GC

To CA, the Axis of the whole Conoid.

That is, as GC squared is to ED, squared, so is GC to CA.
Now,

Now, if from CA you *subtract* CB, there will remain BA, the *Altitude* of the *Parabolic Conoid*.

And since every *Parabolic Conoid* is equal to half a *Cylinder* of the same *Base* and *Altitude* INqK, the *Area* of the *Base* GCH multiplied by half the *Altitude* CA, gives the *Content* of the *Parabolic Conoid*. And the *Area* of the *Base* IBK, multiplied by half the *Altitude* BA, gives the *Content*; therefore, if from the *Content* of GIAKH you *subtract* the *Content* of IAK, there will remain the *Content* of the *Frustrum* GIKH.

Now AC standing at right *Angles* to the *Base* GH, is called the *Abscissa*, and *bk*, *ch*, *dg*, *ef*, are called *Ordinates* rightly applied.

To find the *Latus Rectum* TV.

To find the *Latus Rectum*.

$$\text{As } \left\{ \begin{array}{c} AC \\ 40 \end{array} \right\} \text{ is to } \left\{ \begin{array}{c} GC \\ 16.5 \end{array} \right\} \text{ so is } \left\{ \begin{array}{c} GC \\ 16.5 \end{array} \right\} \text{ to } \left\{ \begin{array}{c} TV \\ 5.8 \end{array} \right\}$$

Note. The *Focus* thro' which the *Latus Rectum* must pass, is distant from the *Vertex* A $\frac{1}{4}$ of the *Latus Rectum*, which in this Example is 1.7. Thus having obtained the *Latus Rectum*, the *Ordinates* may be had thus, *viz.* The *Rectangle* of the *Latus Rectum*, and its intercepted *Axis*, is equal to the *Square* of the *Ordinate*. So that Aw, Ax, Ay, Az, Aa, multiplied by the *Latus Rectum* TV, is equal to the *Square* of Tw, or ex squared, dy squared, ez squared, IB squared, ba squared. Therefore Aw 1.7 \times TV 6.8 = to 11.56, whose *Square Root* = 3.4 = Tw = wV, which drawing at *Right Angles* to AC, gives the two *Points* T and V; and thus take any *Distance* in AC, as Ax, and multiply it by the *Latus Rectum*, the *Square Root* of that *Product* will give the two *Points* e and f; and after this manner may as many *Points* as you please be found, through which the *Curve* of the *Parabola* must pass.

Or, without the *Latus Rectum*, thus:

Having AC and GC given: As any *Abscissa* is to the *Square* of its *Semi-ordinate*, so is any other *Abscissa* to the *Square* of its *Semi-ordinate*.

$$\text{As AC is to } \left\{ \begin{array}{c} Aa \\ AB \\ Az \\ Ay \\ Ax \\ Aw \end{array} \right\} \text{ so is } \left\{ \begin{array}{c} ba \\ IB \\ cz \\ dy \\ ex \\ Tw \end{array} \right\} \text{ squared } \left\{ \begin{array}{l} \text{the Square Roots of} \\ \text{which give ba, IB,} \\ \text{cz, \&c.} \end{array} \right.$$

How to gauge the *Frustrum* EGIBKHF.

To gauge a *Frustrum* of a *Parabolic Conoid*.

RULE I.

To the Sum and half Sum of the *Square* of the Bung and Head Diameters, add $\frac{1}{10}$ of the *Difference* of the said *Squares*; PART I. M multiply

multiply the Sum by the Length within, equal to BD, and divide by 1077.15 for Ale, and by 882.354 for Wine Gallons.

Or,

R U L E II.

A second Rule. To the Square of the Bung Diameter, add the Square of the Head, and multiply that Sum by the Length of the Cask, and divide by 718.1 (that is, twice 359.05) for Ale, and 588.236 for Wine, it gives the Content nearly in Ale and Wine Gallons respectively.

Note, Some instead of the Factor .54, use .56.

But if you gauge this Cask by Rule II. and would do it by the Sliding Rule, then the Factor for reducing it to a Cylinder is only .54.

An Example. Example. Let the Dimensions be the same as in the Spheroid and Parabolic Spindle, viz. the Bung Diameter, 31 Inches, the Head FE = IK = 24, and the Length BD 32.5, what is the Content in Ale and Wine Gallons?

The Operation.

Operation by the first Rule.

$$\begin{array}{r} \text{GH} = 31 \\ 31 \\ \hline 31 \\ 93 \end{array} \qquad \begin{array}{r} \text{EF} = 24 \\ 24 \\ \hline 96 \\ 48 \end{array}$$

The Squares $\left\{ \begin{array}{l} 961 \\ 576 \end{array} \right.$ And $961 - 576 = 385$ and $\frac{1}{10} = 38.5$

$\left. \begin{array}{l} \text{The Sum } 1537 \\ \text{Half the Sum} = 768.5 \\ \text{One Tenth} = 38.5 \end{array} \right\} \text{add.}$

$\begin{array}{r} \text{The Sum} = 2344.0 \\ \text{BD} = 32.5 \end{array}$

$\begin{array}{r} 11720 \\ 4688 \\ \hline 7032 \end{array}$

Ale.

1077.15) 76180.0000 (70.72 Ale Gallons.

Wine.

882.354) 76180.0000 (86.34 Wine Gallons.

By

By the *Sliding Rule*.

Multiply the *Difference* of the *Head* and *Bung* *Diameters* by *By the Sliding Rule*.
 .58, add the *Product* to the *Head Diameter*, which reduceth
 the *Cask* to a *Cylinder*; then on the *Lines C* and *D*,

D		C		D		C
{ 18.94 }	is to	{ 32.5 }	so is	{ 28.06 }	to	{ 70.72 Ale G.
{ 17.14 }		{ 32.5 }		{ 28.06 }		{ 86.34 W. G.
Gauge Pt.		Length		Mean		Content

But the *Content* of this *Cask* may be found more expeditiously, by finding a *mean Diameter*, by this

R U L E.

To the *Head Diameter* add half the *Difference* of the *Dia-* The Rule.
meters; add to this, one-fourth Part of the *Square* of the said
Difference, divided by the *Sum* of the *Diameters*, and that
Sum is the *mean Diameter* sought.

Example. Let the *Bung Diameter* be 31, *Head Diameter* An Example.
 24 Inches; what is the *mean Diameter*?

Operation.

$$\begin{array}{l} \text{The Head } 24. \\ \frac{1}{2} \text{ Diff. Diameters } 3.5 \\ \frac{1}{4} X \square \div Z \text{ Diameters } .223 \\ \hline \text{Mean Diameter} = 27.723 \end{array}$$

By the *Factors*.

$$\begin{array}{r} .54 \\ 7. \\ \hline 3.78 \\ 24. \\ \hline \end{array}$$

The Operation.

The *mean Diameter* nearly agreeing 27.78

Now having found the *mean Diameter*, I find the *Con-*
tent of the *Cask* as follows.

See the Operation on the following Page.

The Operation.

Operation.

Mean Diameter 27.7

× 27.7

1939

1939

554

□ of the mean Diameter 767.29

Length 32.5

383645

153458

230187

Ale,

359.05) 24936.9250 (69.45 Ale Gallons.

215430...

339392

323145

162475

143620

188550

179525

9025

Wine.

If you would have the Content in Wine Gallons, divide by 294.118.

Sliding Rule.

Or, By the Sliding Rule.

As in Page 163, you will find the Content 84.78.

Of the lower
Frustum of two
Hyperbolic Co-
noids.

4. To gauge the lower Frustum of two Hyperbolic Conoids.

See Plate III. Fig. 4.

How to delineate an Hyperbola, in Plano, is shewed in Page 89, and the lower Frustum of two Hyperbolic Conoids, abutting upon one common Base, is represented by A_kB, BEFA.

The Rule.

The RULE how to gauge this.

To the Sum of the Squares of the Bung and Head Diameters, add the Product of the Bung, multiplied by the Head Diameter; this Sum multiply by the Length of the Cask within, and divide the Product by 1077.15 and 882.354, this will give the Content in Ale and Wine Gallons.

Example.

Example. Let the *Head* = 24, *Bung* 31, and *Length* 32.5 An Example.
Inches (as in the other Casks above;) what is the *Content* in
Ale and *Wine Gallons*?

Operation.

$$\begin{array}{r} AB = 31 \\ 31 \\ \hline 31 \\ 93 \\ \hline \end{array}$$

$$\begin{array}{r} kp = 24 \\ 24 \\ \hline 96 \\ 48 \\ \hline \end{array}$$

$$\begin{array}{r} AB = 31 \text{ The Operation.} \\ kp = 24 \\ \hline 124 \\ 62 \\ \hline \end{array}$$

$$\begin{array}{l} \text{Square } \left\{ \begin{array}{l} 961 \\ 576 \end{array} \right. \\ AB \times kp \ 744 \end{array}$$

The Square 576

The Product 744

$$\begin{array}{r} \text{The Sum } 2281 \\ Cd = 32.5 \end{array}$$

$$\begin{array}{r} 11405 \\ 4562 \\ \hline 6843 \end{array}$$

1077.15) 74132.5000 (68.82 *Ale Gallons.*

Ale.

882.354) 74132.50000 (84.02 *Wine Gallons.*

Wine.

By the Sliding Rule.

Multiply the *Difference* between the *Head* and *Bung* by .52, By the Sliding
and that *Product* added to the *Head* 24, makes 27.64, the *Rule.*
mean Diameter; then on the *Lines C* and *D*.

	D	C	D	C
As	{ 18.94 } is { 32.5 }	As	{ 27.64 } is { 32.5 }	As
	{ 17.14 } to { 32.5 }		{ 27.64 } to { 32.5 }	
	<i>Gauge Pt.</i>	<i>Length</i>	<i>Mean</i>	<i>Content</i>
				68.82 <i>Ale Gallons.</i> <i>Ale.</i>
				84.02 <i>Wine Gallon.</i> <i>Wine.</i>

See this Cask gauged by the *Factors* and *mean Diameter* on
the following Page.

The foregoing Cask gauged by the Factors and mean Diameter.

Bung Diam.	31	Factor	.52.
Head Diam.	24	Difference	7.
			<hr/>
			3.64
Difference	7		<hr/>
			24.

Mean Diameter 27.64
 X 27.64

11056

16584

19348

5528

□ Mean Diameter 763.9696
 Length

 32.5

38198480

15279392

22919088

Ale.

359.05) 24829.01200 (69.124 Ale Gallons,
 215430

328601

323145

54562

35905

86570

71810

147600

143620

3980

If we make use of the Factor .54, the
 Content of the Cask will be

 69.85
 The Content by the Factor .52

 69.124 } Ale Gallons.

Difference

 0.626

5. To

5. To gauge the lower Frustrum of two Cones, abutting upon one common Base.

Of the lower Frustrum of two Cones.

See Plate III. Fig. 5.

Definition. This is explained in Plate III. Fig. 5, in which DAE is a Cone. DFGE the lower Frustrum, and DEIH is the lower Frustrum of another Cone abutting upon the Base of the former Cone DE; so that FGEIHD represents this Cask, whose Staves, as GE, &c. from Head to Bung, are perfectly straight; it is plain from the Figure that this Cask holds the least of all others of the same Dimensions, and to gauge it, this is

The R U L E.

From the Sum and half the Sum of the Squares of the Bung and Head Diameters, subtract half the Square of the Difference of the two Diameters; multiply the Remainder by the Cask's Length, and divide by 1077.15, and by 882.354, which will give the Content in Ale and Wine Gallons.

Example. Let the Dimensions be as before, viz. the Length 32.5, Bung 31, and Head 24 Inches; I demand the Content in Ale and Wine Gallons?

Operation.

DE = 31	FG = 24	DE = 31	The Operation.
31	24	24	
—	—	—	
31	96	7	The Diff.
93	48	—	
—	—	—	
	—	—	Square of 49 The Diff.
The Square 961	576		
The Square of FG 576	Half the Square 24.5		
—			
The Sum 1537			
Half the Sum = 768.5			
—			
The Sum 2305.5			
Subtract 24.5	Half the Square of the Difference.		
—			
2281.0			
BC = 32.5			
—			
11405			
4562			
6843			
—			
1077.15) 74132.5000	(68.8 Ale Gallons.	Ale.	
...			
882.354) 74132.50000	(84. Wine Gallons.	Wine.	
...			
M 4		By	

By the Sliding
Rule.

By the Sliding Rule.

The common Multiplier for reducing of this Cask to a Cylinder is .51 : So $31 - 24 = 7 \times .51 = 3.57 + 24 = 27.57$, the mean Diameter.

Ale.
Wins.

	D	C	D	C
A_1	$\left\{ \begin{array}{l} 18.94 \\ 17.14 \end{array} \right\}$	$\left\{ \begin{array}{l} 15 \\ 10 \end{array} \right\}$	$\left\{ \begin{array}{l} 27.57 \\ 27.57 \end{array} \right\}$	$\left\{ \begin{array}{l} 68.8 \text{ Ale Gallons.} \\ 84. \text{ Wine Gallons.} \end{array} \right\}$
	Gauge Pt.	Length	Mean	Content

Note, You may find the Diameter at every Inch from Head to Bung, as has been taught in Page 126; and the Sum of the Areas answering those Diameters will be the true Content of the Vessel.

To Inch the
Frustum.

To Inch the Cone's Frustum, (in the foregoing Example,) the Diameters being taken in the Middle of every Inch.

Depth.	Diam.	Areas.	Depth.	Difference.	Factor.
16.125	24.06	1.405	16.25	7.000000	.4307
15.5	24.33	1.64		6500	
14.4	24.75	1.70		5000	
13.5	25.19	1.77		4875	
12.5	25.62	1.82		12500	
11.5	26.05	1.88		11375	
10.5	26.48	1.95		1125	
9.5	26.91	2.02			
8.5	27.34	2.07			
7.5	27.77	2.15			
6.5	28.20	2.21			
5.5	28.63	2.28			
4.5	29.06	2.34			
3.5	29.49	2.42			
2.5	29.92	2.49			
1.5	30.35	2.56			
.5	30.78	2.64			
0.	31. Bung.				

Common $\times = .4307$

Depth $\times = .5$

Subtract .21535 from the

Bung Diameter 31.

Diameter 30.78645

34.345 }
+ 34.345 }

Whole Content 68.690 Ale Gallons.

Note, .405 is $\frac{1}{4}$ of the Area 1.62, which belongs to the Diameter 24.06, because 15.5 deep, gauges it to 16 deep; so there is but $\frac{1}{4}$ of an Inch deep more, for which $\frac{1}{4}$ of the Area is taken.

Having

Having found the Content of the Cask, as shewn in the *Frustrum* of a *Conoid*, then if we find a *Number* by which if the *Difference* between *Head* and *Bung* be multiplied, and that *Product* added to the *Head Diameter*, it will reduce that Cask into a *Cylinder*, equal in Content to that of the Cask: I say, that is, the *Factor* sought; and this I have exemplified in the *Conoid* above; whose *Factor* is .54 exactly agreeing.

But the Content of a Cask in the Form of the lower *Frustrum* of two *Cones*, may be more expeditiously found, by finding a mean *Diameter* thus.

The R U L E.

To the *Head Diameter*, add half the *Difference* of the *Dia-* The Rule.
meters; to this add one *Twelfth* of the *Quotient*, found by
dividing the *Square* of the said *Difference* by the *Sum* of the
Diameters, and that *Sum* is the mean *Diameter* sought.

Example. Let the *Bung Diameter* be 31, *Head Diameter* An Example.
24 Inches; what is the mean *Diameter*?

Operation.

Head 24.
Half of 7 = 3.5
One Twelfth of .89 = .07

Mean Diameter 27.57

By the Factor.

.51

7.

3.57

24

The Operation.

Mean Diameter agreeing exactly = 27.57

Now to find the Contents in Ale and Wine Gallons, work as in Page 164.

6. How to delineate and gauge an Hyperbolic Spindle.

Of the Hyperbolic Spindle.

See Plate III. Fig. 6.

The *Middle Frustrum* of which GAHICFG shall represent a Cask, whose *Diameter* at the *Bung* AC = 31 Inches, the *Diameters* at the *Heads* GF, HI, are each 24 Inches, and the *Length* KL = 32.5 Inches; also KD = 2.5; and to find the Content of this *Frustrum* in Ale and Wine Gallons.

Draw the right Line DF = 37.6, and at right Angles thereto the Line C; make KB, and BL each equal to the half Length of the Cask; through the Points K and L draw the Lines KO and LQ parallel to C. Make KG and LH, each equal to 42, and BA = 15.5, make Br = KG, so shall Ar be 3.5. Then the transverse *Diameter* of the *Hyperbola* will be expressed by

$$\frac{AB \times BK^2 - Ar^2 \times BD^2}{Ar \times BD^2 - AB \times BK^2} = 71.946,$$

Make

Make $As = 28.94$ (half of 57.88) and through the Point s , draw the line MN parallel to DE , and let the Line GO be parallel to sC . To the transverse Diameter As add the Part Ar , and the Sum will be equal to OG . Now $sB - OG = GK$, which doubled gives GF , a Diameter in the Spindle; and this will hold wherever O or q be taken, and so innumerable Diameters GF , tw , HI , may be found on both Sides AC to the Spindle. And if Diameters be found thus in the Middle of every Inch from K to L , the Sum of those Areas answering, will be the Content of the middle Frustum of the Hyperbolic Spindle: This being more for Speculation than Use, I shall leave the Practice to the Industrious Student.

The Rule.

A General RULE for gauging an Hyperbolic Spindle.

To twice the Square of the Bung Diameter, add the Square of the Head, and call this the first Number. To the Square of the Length, add the Difference of the Square of the Bung and Head Diameters; multiply this Sum by fourteen Times the Square of the Difference between the Bung and Head Diameters, which Product is a Dividend: From thirty-five Times the Square of the Length, take five Times the Square of the Difference of the Head and Bung Diameters, and the Remainder is the Divisor; the Quotient of this Division call the second Number; then multiply the Difference of the first and second Numbers by the Length of the Cask, and that Product divided by 1077.15 for Ale, and by 882.354 for Wine, (which are no more than three Times the Divisors for Circles, as in Page 51.) will give the Content in Gallons respectively.

An Example.

Example. Let the Dimensions of the Hyperbolic Spindle be Length $= KL = 32.5$, Bung $= AC = 31$, Head $= GF = 24$; what is the Content?

See Plate III. Fig. 6.

Operation.

The Operation.	Twice the Square of the Bung	_____	1922
	The Square of the Head	_____	576
	The Sum is the first Number	_____	2498
	The Square of the Length	_____	1056.25
	Difference of Squares of Bung and Head Diameters add	_____	385.
		_____	1441.25
	14 times the \square X of Bung and Head Diameters	_____	686.
		_____	864750
		_____	1153000
		_____	864750

	The Dividend		988697.50

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The Dividend ————— 988697.50

From 35 times \square Length ————— 36968.75

Take 5 times \square of 7 ————— 245.

Rem. Divisor ————— 36723.75

2498. first Number
36723.75) 988697.500 (26.9 second Number.

Difference first and second Number — 2471.1

Length \times 32.5

123555

49422

74133

1077.15) 80310.750 (74.5 Ale G.

Ale.

882.354) 80310.7500 (91.2 ferè W.

Wine.

By the Sliding Rule.

If the Difference of Head and Bung Diameters be multiplied by .67, and that Product added to the Head Diameter, it will give you a mean Diameter near enough in Practice; but otherwise it might be done thus: Set the Gauge Point 32.82 (the Square Root of 1077.15) on D, to the Length on C, then against the Bung, Head, and Difference of the two Diameters on D, are three Numbers on C; then to the Double of the first (or that which answers the Bung Diameter) add the second, and subtract half the third, gives the Content in Ale Gallons.

By the Sliding Rule.

G. P. Length. $\left\{ \begin{array}{l} 31 \text{ B.} \\ 24 \text{ H.} \\ 7 \text{ Diff.} \end{array} \right\} : \left\{ \begin{array}{l} 28.8 \times 2 = 57.6 \\ 17.37 \text{ add} = 17.3 \end{array} \right.$

Ale.

The Sum 74.9

The Number upon the Line C answering 7 = 1.47½ = 1.8

Ale Gallons 74.1

For Wine.

G. P. Length. $\left\{ \begin{array}{l} 31 \text{ B.} \\ 24 \text{ H.} \end{array} \right\} : \left\{ \begin{array}{l} 35.4 - 70.8 \\ 21.2 \end{array} \right.$

Wine.

29.7 : 32.5 ::

Sum = 92.0

Difference 7 = 1.8½ = 9

Wine Gallons 91.1

But

But the Content of the middle Frustum of a Hyperbolic Spindle may be more expeditiously found, by finding a mean Diameter thus.

The RULE.

The Rule.

To the Head Diameter add two Thirds of the Difference of the Diameters, and to this add one Twelfth of the Quotient found by dividing the Square of the Difference of the Diameters by the Head added to twice the Bung Diameter, and this Sum is the mean Diameter sought.

An Example.

Example. Let the Bung Diameter be 31, and the Head Diameter 24 Inches; what is the mean Diameter?

The Operation.

Operation.

By the Factor.

The Head 24.	.67
Two Thirds of X 7 = 4.66	7.
$\frac{1}{12}$ of .57, viz. $49 \div 86 = .0475$	—
	4.69
The mean Diameter 28.7075	24.
	—
The mean Diameter nearly agreeing	28.69

Now to find the Contents in Ale and Wine Gallons, work as in Page 164.

Of the Circular Spindle.

7. How to delineate and gauge a Circular Spindle.

See Plate III. Fig. 7.

Definition.

Definition. If the Arch of the Circle CAD be turned about upon its Chord CD, it will describe a Solid CFAH, DIBGC called a Circular Spindle.

To describe a Circular Spindle, the middle Frustums of which shall represent a Cask, whose Bung Diameter AB = 31 Inches, the Diameters at the Head FG and HI, are each 23 Inches, and the Length KL 38.5.

To find the Content of such a Cask in Ale Gallons, divide the Square of the half Length of the Cask by half the Difference between the Head and Bung Diameters; and to the said half Difference, add the said Quotient, the half of this Sum is equal to the Radius AO; with which, upon O (as a Center) describe the Arch MAN; draw MN and AO at right Angles thereto: Make AE = 15.5, the Semi-Diameter at the Bung. Draw CD parallel to MN, and make EB = AE, and draw the Arch CGBID, (with the same Radius you drew the Semi-circle) set off the Length of the Cask from K to L, through which Points draw Lines parallel to AB; so shall FG and HI be the Head Diameters of the Cask, and each 24 Inches.

To

To find the Diameter in the Middle of every Inch from AB towards FG: Now because FP is parallel to AO, the Triangle PFO = Triangle FOq; consequently PO = Fq. Now by what is taught in Page 25, if from the Square of FO (which is always equal to AO Radius,) you subtract the Square of PO, the Square Root of the Remainder will be PF, from which subtract FK, (being always given in the Question) there will remain PK, which will be always the same throughout all the Parts of the Length of the Cask KL.

An Illustration of the whole Process in Numbers.

KE = EL = 19.25 squared = 370.5625, divided by 4, ^{An Illustration by Numbers} half the Difference between the Head and Bung Diameters, Quot. 92.64 ÷ 4 = 96.64, half = 48.32 = AO = FO; then because PO = Fq, in the Triangle FPO, I find PF = 44.32, from which take FK = 11.5, there remains KP = 32.82, which is a constant standing Number: These Things being premised, let it be required to find a Diameter in the Middle of every Inch from K to E; then the Middle of the first Inch from F, the Head Diameter, will make Fq = 18.75 = PO, (for the Line FP approacheth nearer to AO, by so much as you take the Diameter farther from K, till at last FP will coincide with AO,) whose Square taken (always) from 2334.8224, the Square of FO = 48.32, from whose square Root take the standing Number 32.82 = PK, there will remain half the Diameter sought, which I have thus calculated, and inserted in the following Table, with their Areas.

See the following Page.



A TABLE

A TABLE shewing the Content of Half the Middle Frustum of the Circular Spindle F A B G F.

See Plate III. Fig. 7.

A Table of half the middle Frustum of a Circular Spindle.

Distance from G. F.	Diameters in Inches.	Areas in Ale Gallons.
0	23.00	—
.5	23.42	1.53
1.5	24.24	1.64
2.5	25.00	1.74
3.5	25.72	1.84
4.5	26.38	1.94
5.5	27.00	2.03
6.5	27.58	2.12
7.5	28.10	2.20
8.5	28.58	2.27
9.5	29.00	2.34
10.5	29.40	2.41
11.5	29.74	2.46
12.5	30.04	2.51
13.5	30.30	2.56
14.5	30.54	2.60
15.5	30.70	2.62
16.5	30.84	2.64
17.5	30.94	2.66
18.5	30.98	2.67
19.25	31.00	0.67
The Sum		43.45
Double the Sum		86.90

So the Content of the Frustum FAHIBG is 86.90 Ale Gallons, as in the above Table.

Here you see I have (according to the Directions above) calculated the Diameters in the Middle of every Inch, from the Head GF, towards the Bung AB, and 19 of those Areas gauges the Frustum to 19 Inches from the Head GF; and because there is one Quarter of an Inch more, I take $\frac{1}{4}$ of the Area answering the Bung Diameter 31, viz. $\frac{1}{4}$ of 2.68 = 0.67 Parts of a Gallon, which I add to the other Areas, and the Sum is as you see in the Table annexed. The Operation for the Diameter of the Middle of the second Inch from G F, that is, at 1.5 from the Head, stands thus, $Fg = 19.25 - 1.5$ is 17.75 $\square = 315.0625$; then $FO \square 2334.8224 - 315.0625 = 2019.7599$, whose Root

Ch. XXV. Of Cask-Gauging.

175

Root is $44.94 = FP$; from which take $PK = 32.82$, leaves 12.12 ; doubled gives 24.24 , the Diameter in the Middle of the second Inch.

Note, You must now suppose FP to be moved nearer to AO 1.5 Inch, &c.

Find the Content of a Cask in Ale Gallons by *Inching*, as is shewn in Page 174; then if we find a Number or Factor which multiplied by the Difference between the Head and Bung Diameter, and that Product added to the Head Diameter, gives such a mean Diameter, as being squared and multiplied by the Length, and divided by 359.05, gives a Content equal to the Content before found, the said Factor is true, otherwise not.

A General RULE for gauging a Circular Spindle.

FIRST, To twice the Square of the Bung Diameter, add A general Rule. the Square of the Head Diameter, and call that Sum the first Number. SECONDLY, To the Square of the Length, add the Square of the Head Diameter, and from that Sum, take the Square of the Bung Diameter, and multiply the Remainder by fourteen times the Square of the Difference of the Head and Bung Diameters, and that Product is a Dividend; then multiply the Square of the Length by 35, to which add five times the Square of the Difference of the Diameters, and that shall be a Divisor; the Quotient of this Division is the second Number. Then multiply the Difference of the first and second Number by the Length of the Cask, divide the Product by 1077.15 for Ale, and by 882.354 for Wine, gives the Content in Ale and Wine Gallons respectively.

Example. Let the circular Spindle [Plate III. Fig. 7.] have An Example. its Length = KL 38.5, Bung, = AB 31, and Head = HI 23 Inches; how many Ale and Wine Gallons doth it hold?

Operation.		Operation.
Twice the Square of the Bung	_____	1922
Square of the Head Diameter add	_____	529
First Number	_____	2451
Square of the Length	_____	1482.25
Square of the Head, add	_____	529.
The Sum	_____	2011.25
Square of the Bung, subtract	_____	961.
Remains	_____	1050.25
		Remains.

Of Cask-Gauging.

Part I.

Remains ————— 1050.25
 Fourteen times the Square of the Diff. Diameters \times 896

630150

945225

840200

The Dividend ————— 941024.00

Thirty-five times the Square of the Length — 51878.75

Five times the Square of the Diff. of the Diam. add 320.

The Divisor ————— 52198.75

52198.75) 941024.000 (18.3 Subtract from the

First Number ————— 2451.

Remains ————— 2432.

Length ————— \times 38.5

121635

194616

72981

Ale.
 Wine.

1077.15) 93658.950 (86.9 Ale Gallons.

882.354) 93658.950 (106.1 Wine Gallons.

The Content the same as by Inching in Page 174.

But the Content of the circular Spindle may be found more expeditiously, by finding a mean Diameter thus.

R U L E.

The Rule.

To the Head Diameter, add two Thirds of the Difference of the Diameters, and to this $\frac{11}{16}$ of the Square of the Difference of the Diameters divided by the Sum of the Head and twice the Bung Diameter, and this Sum is the mean Diameter sought.

An Example.

Example. Let the Head be 23, [Plate III. Fig. 7.] Bung 31, Length 38.5 Inches; what is the mean Diameter and Content in Ale Gallons?

Operation.

Operation.	By the <i>Fattor</i>	The Operation.
Head 23.		
$\frac{2}{3}$ of X 8 = 5.333	.68	
$\frac{1}{6}$ of 64, viz. 11.73 ÷ 85 = .138	8	
Mean Diameter 28.471	5.44	
28.471	23.	
28.471	28.44	
199297		
113884		
227768		
56942		
Square 810.597841		
Length × 38.5		
4052989205		
6484782728		
2431793523		

359.05) 31208.0168785. (86.918 Ale Gallons. Ale.

As in Page 174. was found by *Inching*.

And now I have gone through all the *six Varieties* of Casks, and found the *several Contents* to be,

	Ale.	Wine.	
1. The <i>Spheroid</i>	75.37	92.01	} Gallons.
2. The second <i>Variety</i>	74.78	91.28	
3. The third <i>Variety</i>	74.55	91.01	
4. The fourth <i>Variety</i>	71.07	86.34	
5. The fifth <i>Variety</i>	68.82	84.02	
6. The sixth <i>Variety</i>	68.8	84.	

Of the Ale and Wine Contents of the *six Varieties* of Casks.

To gauge a Cask, *without regarding* to what *Variety* it belongs.

See Plate I. Fig. 19.

Before this can be done, we must actually take a *mean Diameter*, as F G, Plate I. Fig. 19.

When you have taken the *Length* A B = 32.5, the *Bung* C D = 31, and the *Head* I K = 24 *Inches*, lay your *Gauging Rod* upon the *Bung* C, so that it may be *parallel* to A B; then will H L be = to A B the *Length*, and if twice H I be taken from C D, the *Remainder* will be = to I K the *Head Diameter*. Make E C = H E, and measure E F, whose *Double* be-

PART I,

N

ing

ing taken from CD, there will remain FG the mean Diameter, which we will suppose to be 28.85, (as in the Spheroid) And now to gauge the Cask, this is

The R U L E.

The Rule.

To the Square of the Bung Diameter, add the Square of the Head, and four times the Square of the mean Diameter; multiply this Sum by the Length of the Cask, and divide by 2154.3 for Ale, (that is twice 1077.15,) and by 1764.71 for Wine, (that is twice 882.354,) and that is the Content respectively.

An Example.

Example. Admit the Length be 32.5, the Bung 31, the mean Diameter 28.85, and the Head 24 Inches; what's the Content in Ale and Wine Gallons?

The Operation.

Operation.

The Square of the Bung 961
The Square of the Head 576
4 times square of the mean Diam. 3329.29

The Sum 4866.29
The Length 32.5

2433145
973258
1459887

Ale.

2154.3) 158154.425 (73.41 Ale.

Wine.

1764.71) 158154.425 (89.6 Wine.

By the Sliding Rule.

By the Sliding Rule.

Set the Gauge Point 46.4 on D, to the Length on C = 32.5, and against the Bung 31, the Head 24, and the mean Diameter 28.85 on D, are 14.5, 8.6, and 12.5; then to the Sum of the two first 23.15 add four times the third = 50, and that Sum = 73.15 is the Content in Ale Gallons.

For Wine.

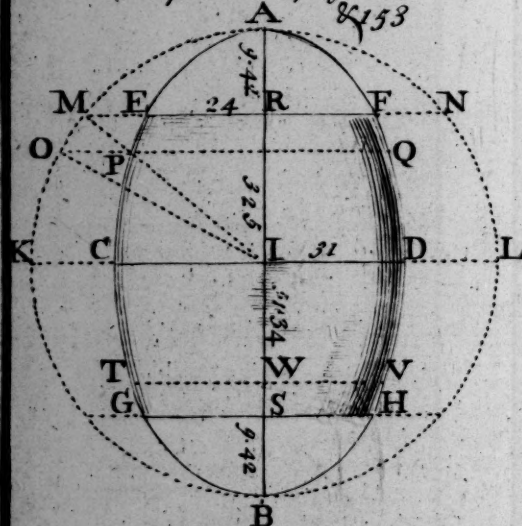
Set the Gauge Point 42 on D, to the Length on C = 32.5, and against 31, 24 and 28.85, are 17.7, 10.6, and 15.3, which Sum of the two first, added to four times the third, gives 89.5 Wine Gallons.

It deserves our Consideration, That the present Practice of Gauging depends upon assigning to the Cask or Tun to be gauged, some known Form, and that without assuming that Form, there's no taking one Step towards the computing its Content; and therefore if we are not exact in our Assumption, it

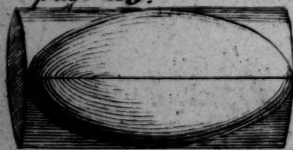
Fig. 1

A Spheroid. page 115

8153



page 118.



page 153.



Fig. 3

A Parabolic Conoid page 160

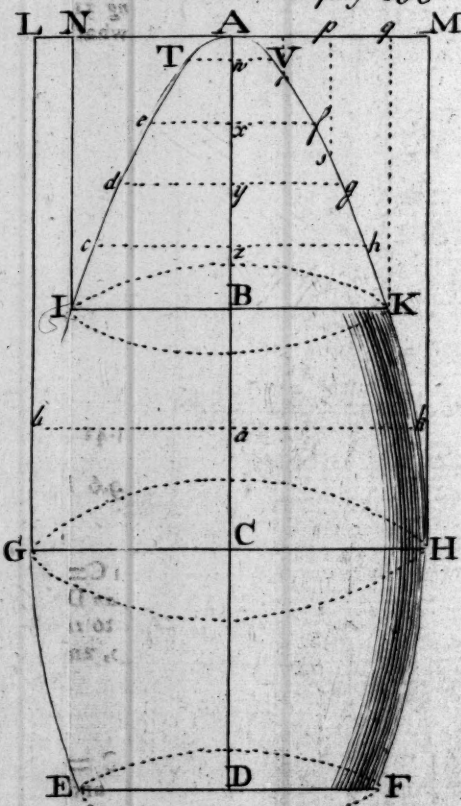


Fig. 4

A Hyperbolic Conoid

Page 89. & 164.

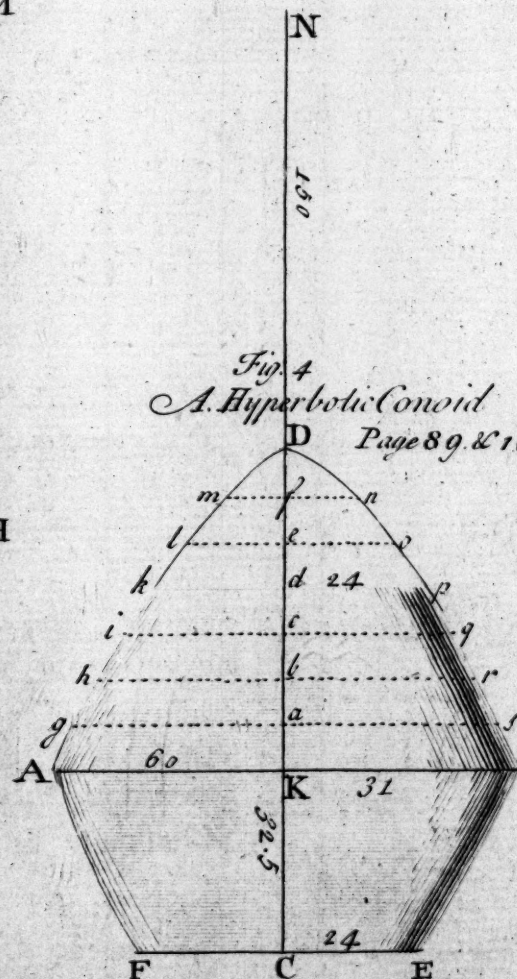


Fig. 6

A Hyperbolic Spindle. page 169

M

D

A

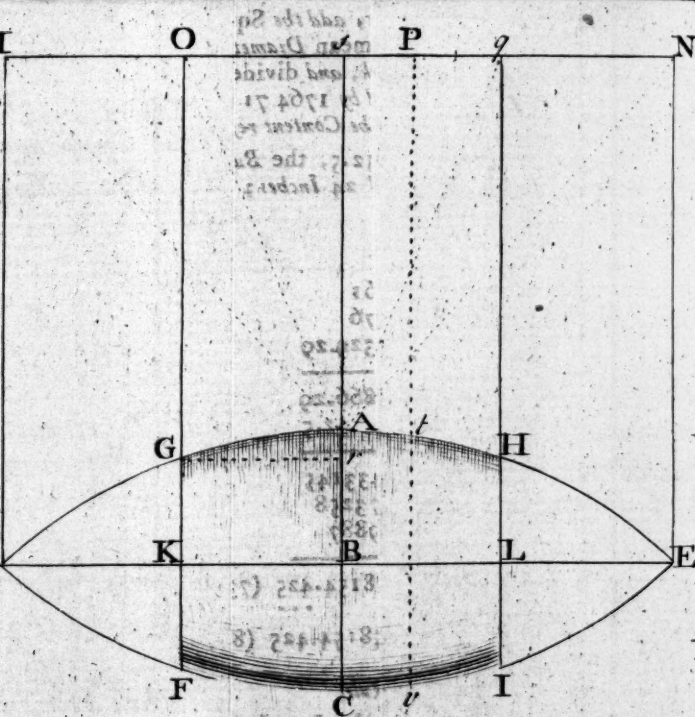


Fig. 2
(A Parabolic Spindle. page 158)

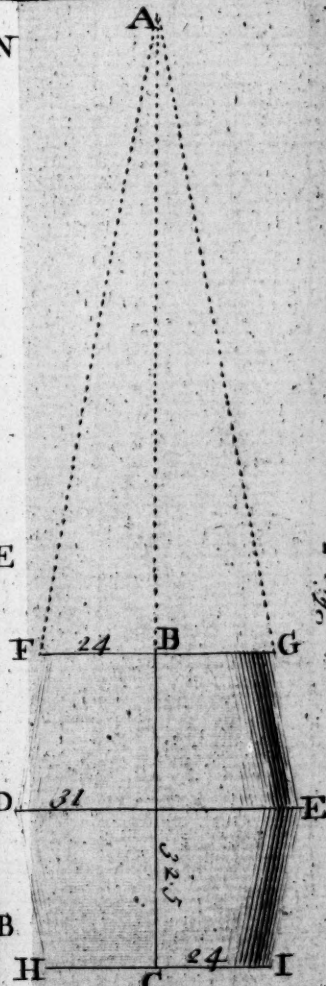


Fig. 5
(The lower Frustum of two
Conoids abutting upon
one common Base D.E.)

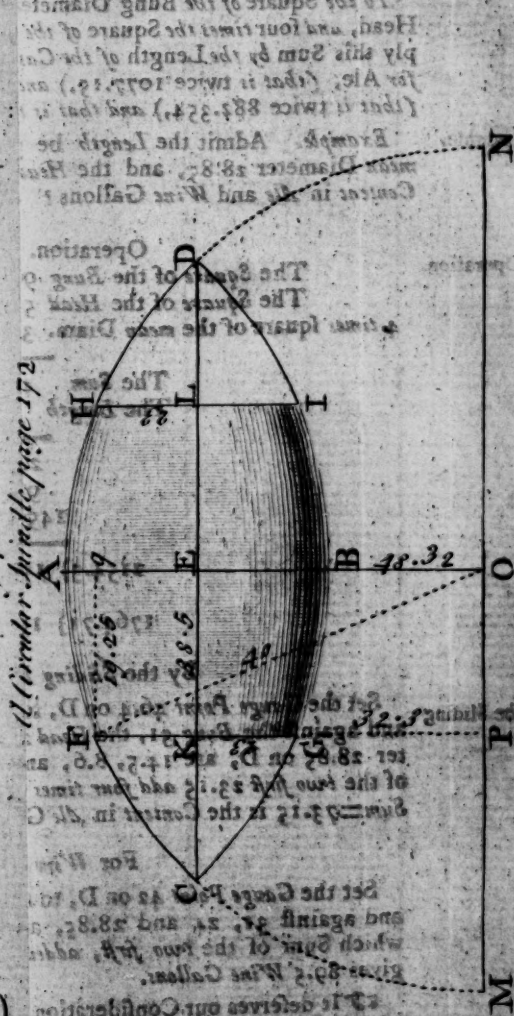


Fig. 6
(The lower Frustum of two
Conoids abutting upon
one common Base D.E.)

It is impossible we should ever be exact in ascertaining the true shape of a cask. Now to such as consider these Matters, it must appear that there never was any Cask in the Shape of any one of those Solids whose Names they bear; unless it can be supposed that it could happen to be by Accident, the Cask never in fact being then as such. And though it should be admitted that a Cask may approach nearly in Form to such a Solid, yet what Officer ever had any manner of Rule to assist him in determining to which of the Varieties it belonged? Whether it was the Half of a Torus, Paraboloid, or even Diameter, was taken in the Middle between the Head and Foot, from which the Form of the Cask is in some measure to be determined, we are always certain to have the Content ascertained to a exceeding near the Truth.

C A A P. XXVI

To find the Usage of a Cask

See Plate IV. Fig. 4

THE Usage of a Cask is so hard to find, that I shall not attempt to give a Rule, when it is not well known. I shall only take from the whole Content gives what it wants to be taken out, by knowing the Usage, and subtracting it from the whole Content, it leaves the Usage of the Quantity of Liquor then in the Cask. Several Writers on this Subject have shown how to calculate a Cask by a Table of Segments, calculated for a Cylindrical Cask; but because that requires you always to have the Cask ready at hand, and does not always agree with the Usage of Segments, on the sliding Rule, I shall here omit to show how to effect the same by Pen and Sliding Rule. In this Chapter I have confined myself to the Usage of Casks only, because in the Practice of the Excise, all Casks are considered as such.

By the Pen, for a Ring Cask.

See R U L E.

Divide the wet or dry Inches by the Ring Diameter, and by the Length of the Cask, and the Quotient will be the Content. For a Cask of any other Shape, divide the Quotient by the Content of a Cylindrical Cask, and the Remainder will be the Content. But if the Quotient be above .000, add to it $\frac{1}{2}$ Part of the Excess of the Quotient above .000; that sum multiplied by the Content will be the Content.

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it is impossible we should ever be exact in ascertaining the Content. Now to such as consider these Matters, it must appear, that there never was any Cask in the Shape of any one of those Solids whose Names they bear; unless it can be supposed it could happen so by Accident, the Cooper never intending them as such. And though it should be admitted that a Cask may approach nearly in Form to such a Solid, yet what Officer ever had any manner of Rule to assist him in ascertaining to which of the Varieties it belonged? Whereas, by the Help of a fourth Dimension, or mean Diameter, viz. a Diameter taken in the Middle between the Head and Bung, (from which the Form of the Cask is in some measure to be determined) we are always certain to have the Content exactly true, or exceedingly near the Truth.

C A A P. XXVI.

To find the Ullage of a Cask.

Of Ullaging
Casks.

See Plate IV. Fig. 4.

Definition. THE Ullaging of a Cask is to find how much Definition.
Liquor there is in it, when it is not full; which taken from the whole Content gives what it wants to fill it up; or, by knowing the Vacuity, and subtracting it from the whole Content, it leaves the Ullage or the Quantity of Liquor then in the Cask.

Several Writers on this Subject have shewn how to ullage a Cask by a Table of Segments, calculated for a Cylindrical Cask; but because that requires you always to have that Table ready at hand, and doth not always agree with the Lines of Segment, on the Sliding Rule, I shall here omit it, and shew how to effect the same by Pen and Sliding Rule.

N. B. In this Chapter I have confined myself to the Spheroidal Cask only, because in the Practice of the Excise all Casks are considered as such.

1. By the Pen, for a lying Cask.

By the Pen.

The RULE.

Divide the wet or dry Inches by the Bung Diameter, and if The Rule.
the Quotient be under .500, subtract from the Quotient a fourth Part of what that Quotient wants of .500, and the Remainder is a Decimal Fraction, which multiply by the Content.

2. But if the Quotient be above .500, add to it $\frac{1}{4}$ Part of the Excess of the said Quotient above .500; that Sum multiplied

N 1

Of Allaging Casks. Part I.

plied by the Cask's Content, gives the Liquor in the Cask, if you took the wet Inches; but if the Dividend was the dry Inches, the Product is what it wants to fill it up.

Example in a Spheroidal Cask.

Example in a Spheroidal Cask.
 Length ——— 32.5
 Bung Diameter — 31.
 Admit the } Wet ——— 21. } Inches.
 Dry ——— 10.
 Content ——— 75.37 Ale Gallons.

What is in the Cask. I demand what Drink there is in the Cask, and how many Gallons will fill it up?

The Operation. Operation.

31) 21.000000 (.677419

..... 5 Subtrah*

4) 177419 (.044355

..... .677419 + Quotient.

The Area of the Segment 721774

The Content of the Cask 75.37 Ale Gallons.

Ale.

5052418

2165322

3608870

5053418

In the Cask.

In the Cask 54.40010638 Ale Gallons.

What will fill it up.

2. For the Vacuity, or what will fill it up.

From .5

31) 10.000000 (.322580 —

..... .322580 Quotient.

4) .177420 (.044355 Subtrah.

The Area of the Segment .278225

The Content of the Cask 75.37 Ale Gallons.

Ale;

1947575

834675

1391125

1947575

Wants to fill the Cask 20.96981825

Add what is in the Cask 54.40010638

Ale.

The Sum is the Cask's Content 75.36992463 Ale Gallons.

Note,

* N. B. The .5 may be called .50, or .500, or .5000, or .50000, &c. to fill up the Number of Decimal Places: In the Rule above it is called .500.

Ch. XXVI. Of ullaging Casks.

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Note. The above Rule being adapted to Casks nearer to a A Note. Cylindrical, than a Spheroidal Form; the Segments, and consequently the two Quantities, viz. the remaining Liquor in the Cask and the Vacuity, will differ from those found by the Lines of Segments on the Sliding Rule; because those Segment Lines are adapted to the Spheroidal Cask.

2. By the Sliding Rule.

1. As the Bung Diameter, on the Line of Numbers on the Little Slider, marked N, By the Sliding Rule.
Is to 100, on the Line of Segments, marked SL;
So is the wet or dry Inches on the Line of Numbers N,
To a Segment upon SL; which reserve.

2. As 100 upon A,
Is to the Cask's Content upon B;
So is the reserved Segment upon A,
To the Quantity of Liquor in the Cask.

N.		N.
Bung.	SL.	Wet. SL.
As 31 is to 100, so is 21 to 73.8.		
A.	B.	A. B.
As 100 is to 75.37, so is 73.8 to 55.6		
Radius	Content	Segm. Ullage

For the Vacuity by the Sliding Rule.

Here you must work, in all respects, as you did for the Ullage; only instead of the wet Inches, you must now make use of the dry Inches.

Operation.

N.		N.
Bung.	SL.	Dry Segm.
As 31 is to 100, so is 10 to 26.2; reserve this Segment.		
A.	B.	A. B.
As 100 is to 75.37, so is 26.2 to 19.7, the Vacuity.		
Radius	Content	Segm.
	In the Cask, add 55.6	

The Operation.

The Sum is the Content 75.3 Ale Gallons.

2. To find the Ullage of a Standing Cask.

See Plate IV. Fig. 5.

To ullage a Cask standing upon one End.

1. To calculate any Diameter between the Bung and Head, and by such Diameter to find the Quantity of Liquor in the Cask when it is Part empty.

N 3

The

Of ullaging Casks.

The R U L E.

1. From the Square of the Bung Diameter, subtract the Square of the Head Diameter, and divide the Square Root of the Remainder by half the Cask's Length.

2. Multiply this Quotient by the Number of Inches which the Diameter sought is distant from the Bung, and call this Product your Subducend.

Lastly, From the Square of the Bung Diameter, subtract the Square of your Subducend, and the Square Root of the Remainder is the Diameter sought.

A Second Rule.

Or, say.

As the Square of half the Cask's Length.

Is to the Difference of the Squares of the Bung and Head Diameters ;

So is the Square of the Distance of the Bung from the Liquor's Surface,

To the Difference of the Squares of the Bung Diameter and Diameter of the Liquor's Surface.

An Example.

Example. Let us suppose a Spheroidal Cask posited as before, the Length 32.5 Inches; the Bung 27, the Head 23, the Content of this Cask will be 59.95 Ale Gallons. Then let the wet Inches be 8.5, I demand the Diameter DF, and how much Liquor there is in the Cask?

Operation,

For the Diameter DF.

HI = 27	AC = 23	BG = 32.5
27	23	BK = 16.25
—	—	BK = 16.25
189	69	8125
54	46	3250
—	—	9750
The Square 729	The Square 529	1625
Square 529	K G = 16.25	—
The Differ. 200	E G = 8.5	Square of BK = 264.0625

$$7.75 \times 8 = 60.0625$$

Now say,

As 264.0625 is to 200, so is 60.0625 to 45.49.

Square BK. Diff. \square Diff. Diff.

From the Square of HI = 729.

Subtract 45.49

$$683.51 \quad (26.1 = DF.)$$

Now,

Ch. XXVI. Of Allaging Casks.

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Now, for the Content of the *Fruſtum* DFML, by Rule II.
Page 180.

To twice the Square DF = 1367.02
Add the Square LM = 529.

The Sum = 1896.02
The wet Inches 8.5

948010
1516816

1077.15) 16116.1700 (14.95 Ale Gallons.
The Cask's whole Content ... 59.95

There wants to fill the Cask 45.00

Or,

If the Cask bulge but a little, divide the wet or dry Inches by Of Casks a little
the Cask's Length, and if the Quotient exceeds .500, add to the bulging.
ſaid Quotient $\frac{1}{10}$ Part of the Exceſs; but if it be under .500,
ſubtract $\frac{1}{10}$ Part of what it wants of .500, and the Sum or Re-
mainder is a Decimal Fraction, by which multiply the Content
of the Cask, and the Product will be the Quantity of Liquor
therein, if the Dividend was the wet Inches; but if it was the
dry Inches, it gives the Vacuity, or what it wants to fill it up.

See both Operations.

The Operation.

Wet. .5000 From Dry.
32.5) 8.50000 (.2615 325) 24.00000 (.7384
... .5000 Subtract.

10.) .2385 (02385 +

10) .2384 (0.2385 +

The Wet Quotient .2615 The Dry Quotient .7384
 $\frac{1}{10}$ of wants of 5000 = .02385 $\frac{1}{10}$ of Exceſs .02385 +

The Segment .23765
The Content 59.95

The Segment .76225
The Content 59.95

118825
213885
213885
118825

381125
686025
686025
381125

The Ullage 14.2471175
The Vacuity 45.6958875

45.6968875

The Content 59.9440050 Proof.
N 4

For

The Ullage by
the Sliding Rule.

Of ullaging Casks.

Part I.

For the Ullage by the Sliding Rule.

N. Radius. N. S. S.
Length. SS. Wet. Seg. A. B. A. B.
As 32.5 is to 100, so is 8.5 to 24. As 100 is to 59.95, so is 24 to 14.3
Radius Content Seg. Ulla.

For the Vacuity.

N.
Length. SS. Dry. Seg. A. B. Seg. B.
As 32.5 is to 100, so is 24 to 76. As 100 is to 59.95, so is 76 to 45.6
The Ullage added 14.3

The Cask's Content in Ale Gallons 59.9

A second Way.

A second Way to ullage a standing Cask.

FIRST, Find the Diameter at the Surface of the Liquor, thus : Find the Middle of the Cask by taking the Length of the Staff with a String, and double that String, by which means the Middle of the Cask at the Outside of the Staff (or Stave) may be found ; there make a Mark, and from this Mark set off the Distance of the Liquor's Surface from the Bung upwards, and there make another Mark : THEN laying the Side of a Square over the Chime of the Cask, that the other Side may just touch the Bung, measure the Distance between the Side of the Square and the last Mark, holding your Rule parallel to the Head of the Cask ; the double of that Distance subtracted from the Bung Diameter, leaves the Diameter of the Liquor's Surface. The Diameter being found, multiply the Square of the middle Diameter (of the wet Inches, but the middle Diameter of the dry, if you would have the Vacuity,) by the wet or dry Inches, i. e. (by the least of them ;) and this Product divide by 359.05 for Ale, and 294.118 for Wine, the Quotient will be the Ullage, if the Cask is not half full, or very near it ; but when that happens, the mean Diameter of the Cask must be made use of instead of the middle Diameter.

An Example.

Example. Let the Length be 32.5, the Bung 27, the Head 23, Diameter on the Surface of the Liquor 26.1, the Mean 24.63, the Content 59.95 Ale Gallons, wet 8.5 Inches ; what is the Ullage ?

The Operation.

Operation.

The Square of the mean Diameter 606.6369
The wet Inches E.G. 8.5

50331845
48530952
359.95 5156.41365 (14.362 ferd.)

By

Ch. XXVII. Of Gauging Warm Worts.

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By the Sliding Rule.

By the Sliding Rule.

Set 18.94 the Gauge Point on D, to 8.5 the wet Inches on C, and against 24.6 the middle Diameter on D, is 14 4 on C, the Ullage required.

There might be a Line put on the Sliding Rule for ullaging of lying Casks, to lie by the Side of the Line of Numbers, and to be so contrived, that 18.95 may answer to 10 on the Line N, and 460.58 answer to 1 on N for Ale; and for Wine 17.14 on the new Line to answer 10 on N, and 416.87 to answer 1 on N; and the intermediate Divisions may be found thus:

To make the Line for $\left\{ \begin{array}{l} \text{Ale,} \\ \text{Wine,} \end{array} \right\} \text{ divide } \left\{ \begin{array}{l} 359.05 \\ 294.118 \end{array} \right\} \text{ by the Square of any given Number; look for the Quotient in Mr. Abraham Sharp's Tables of Segments, and take out the versed Sine answering thereto; then against the versed Sine on the Line N, (as the two Lines lie even), is the Point of Division on the new Line belonging to the said Number, whose Square was the Divisor above.}$

But this Line I am speaking of being only for lying Casks, and to be used with the mean Diameter, until it has been actually produced and approved of by those who are in Authority, there is no Probability of its ever being practised in the Excise.

CHAP. XXVII.

How to gauge Warm Worts.

Of warm Worts.

WHEN the Parliament laid on the Excise Duty, it was enacted, That for every Ten Gallons of hot Wort gauged, there should be Allowance of one Gallon for Waste; for it is found by Experience, that every ten Gallons of hot Wort will be but Nine when cold*.

The country People commonly cool their Worts in Brass Pans, whose Diameter is about 28 Inches, and Depth 10 Inches, more or less; and these are commonly deeper in the Middle, than at the Side by an Inch or two; therefore with your Rule take the Diameter of the Liquor's Surface, by drawing out the Slider B, and pin it fast. Then draw out the other Slider till it touch the Side of the Pan, and on its Inside is shewn both the Diameter and Area in Ale Gallons; which multiply by the Depth (taken about the Middle between the Center and the Side) and the Product will be the Content near enough the Truth.

Or,

On the Line C and D, set the Depth to the Ale Gauge-Point 18.94, and against the Diameter on D, is the Content on C.

If the Wort be cooling in an Elliptical Vessel (as I have often known) take the cross Diameters, and work as in the Ellipsis Page

* See the Note on Page 138.

Page 81, for the *Area*: And because now we are not only to find the *Area*, but also the *Content*; therefore this *Area*, multiplied by the *Depth*, gives the *Content*.

Or,

Find a Geometrical Mean between the two Diameters, and then on the Lines C and D you may gauge it as a Circle.

An Example.

Example. Let one of the Diameters be, 61 Inches, and the other 47.5, and the Depth 11.2 Inches; I demand how much Wort there is in the Tub?

For the Mean, as in Page 43.

1. For the Mean.

As 61 is to 61, so is 47.5 to 53.8 the mean Diameter.

Diam. Diam. Diam.

For the Content.

2. For the Content.

As 18.94 is to 11.2, so is 53.8 to 90.3 the Content in Ale Gall. G. Pt. Depth Mean

Of Worts in small Vessels.

And when you find the Wort in round Bowls, you must gauge them as Segments of a Globe; but in Practice rather than the Officer should take so much Trouble, as to stand gauging every little Vessel, desire the Brewer thereof to put several small Quantities together in one Vessel, and that will save both the Officer a great deal of Trouble, as well as do the Owner the more Justice.

When you insert the Warm Gauge in your Stock Book, you must put *wo* over it, that so you may distinguish your warm Gauges from the other; that in casting them up, you may make the proper Allowance of One Gallon in Ten, as the Law directs.

Of deducting one Gallon in 10 for warm Worts.

How to deduct One Gallon in Ten from warm Worts.

Now, the Deduction of one Gallon in ten may be done either by Subtraction, or by Multiplication. It is done by Subtraction, by setting the Number of warm Gallons down twice, the under Number must be placed one Place more to the right Hand, and subtract as usual: The Remainder is the Quantity of Wort to be charged.

Or,

Multiply the Number of warm Gallons by .9 a Decimal, and the Product will give the net Gallons.

An Example.

Example. Let the Gauge of warm Worts be 90.3 Gallons; what must be charged?

By Subtraction and Multiplication.

	90.3		90.3
Subtra ^d	9.03	Multiply	.9
	<hr/>		<hr/>
Net Gallons	81.27	Net Gallons	81.27

Note,

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Note, In small Elliptical Tubs, you may find the *Area* near enough in Practice, thus: Of small Elliptical Tubs.

Find, by drawing out the Rule, the *Area* of the longest Diameter, and in like manner the *Area* of the shortest Diameter; half the Sum of these two is the *Area* sought.

How to find the Net Gallons at one Operation by the Diameter and Depth. Of the net Gallons by the Diameter and Depth.

But if the Wort be in open Tubs, on which you have fixed *Areas*, take the *Diameter* and *Depth* (as above directed) on the Lines C and D. Instead of the *Ale Gauge Point* 18.94, make use of 20; to which set the *Depth* on C. And against the *Diameter* on D, is the *Content* of net Wort on C. As for Instance—In the *Elliptical Tub*, I found the mean Diameter to be 53.8, and the *Depth* 11.2; what are the net Gallons?

D	C	D	C
As 20 is to 11.2, so is 53.8 to 81.3 the net Gallons.			
G. Pt.	Depth	Mean	

How to cast up a warm Gauge by the Area and Depth. To cast up warm Gauges by the Area and Depth.

But if your warm Gauge be in a Tub, which you have in your Stock-Book upon *Areas*, then the two Lines A and B must be used. For as 1 upon A is to .9 upon B, so is any Number of warm Worts upon A to the net Gallons upon B.

Suppose, as before, the warm Gallons are 90.3; what is the Net? A new Multiplier found.

A	B	A	B
As 1 is to .9, so is 90 to 81.3 the net Gallons.			
Unity	Factor	Warm W.	

Set 1 upon A to .9 upon B, and against 1 upon B is 11.1 upon A, a new Multiplier; which will perform the same as .9 doth, how cast up. But if you call the .9 a whole Number, then will the 1 be 10. on the Rule.

A	B	A	B
As 11.1 is to 10, so is 90.3 to 81.3 net Gallons, as before.			
Fact.	Fact.	Warm W.	

And from what goes before, it is easy to conceive, that warm Gauges, which are taken in Tubs, which stand upon *Areas*, may be cast up at one Operation by the Rule, with the Allowance of One Gallon in Ten deducted.

Example,

To reduce Ale Measure. Part I.

An Example.

Example. The Area of the mean Diameter 53.8 is 8.02, and the Depth 11.2 Inches; what is the net Gallons?

A B A B

As 11.1 is to 11.2, so is 80.6 to 81.3, the net Gallons.

Mult. Depth Area

By these Rules I have shewn how warm Gauges are cast up, either by their Areas or Diameter, at one Operation by the Sliding Rule.

See Plate II. Chap. III.

C H A P XXVIII.

Of reducing Ale to Wine Measure, &c.

How to reduce Ale Measure to Wine, Corn, &c. Measure, & à Contra.

MOST Officers of Excise make Use of this Proportion, as 9 to 11, so is the Wine Gallon to the Ale Gallon; but this is not exact, as I prove by this Proportion.

Common Method not exact.

As 231 is to 282, so is 9 to $10\frac{28}{37}$, for which they take 11,

To find Multipliers.

But to remedy this Imperfection, you may find Multipliers, which will do the Work at one Operation, thus:

As 231 is to 282, so is 1 to 1.220779.

As 282 is to 231, so is 1 to .819148.

To find Multipliers for the Malt Bushel.

And for the Malt Bushel the Factors are thus found;

As 282 is to 2153.4, so is 1 to 7.6256

As 2150.4 is to 282, so is 1 to .131137

As 231 is to 2150.4, so is 1 to 9.3092

As 2150.4 is to 231, so is 1 to .107422

Table of the Factors.

By which I have found the Factors for reducing

OF {
 Ale to Wine, is 1.220779
 Wine to Ale, .819148
 Ale to Corn, .131137
 Corn to Ale, 7.625602
 Wine to Corn, .107422
 Corn to Wine, 9.309177

E X A M P L E S.

Examples.

In 231 Gallons of Ale, how many Gallons of Wine?

Ale to Wine.

$231 \times 1.220779 = 282$ Wine Gallons nearly.

In

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In 282 Gallons of *Wine*, how many Gallons of *Ale* ?
 $282 \times 8.19148 = 231$ *Ale* Gallons nearly.

Wine to Ale.

In 282 Bushels of *Malt*, how many Gallons of *Ale* ?
 $282 \times 7.625602 = 2150.42$ Gallons of *Ale*.

Malt to Ale.

In 231 Bushels of *Malt*, how many Gallons of *Wine* ?
 $231 \times 9.309177 = 2150.42$ Gallons of *Wine* ?

Malt to Wine.

And a Cistern that holds 80 Bushels of Barley, will hold
 610.04776 Gallons of *Ale*.

If instead of the *Corn* (or *Malt*) *Busbel* you will have the *Of the Corn*
Corn Gallon, it is no more than $\frac{1}{8}$ Part of 2150.42 *ferè*; which *Gallon*.
 is * 268.802294375 *Cubic Inches*; as will be made more ma-
 nifest when we come to treat of *Malt Gauging*.

Note, By the above *Rules* you may find *Factors* for the re-
 ducing of *Ale*, *Wine*, *Malt*, &c. to *Tallow*, *Soap*, or *Starch*.

CHAP. XXIX.

OF MALT-GAUGING.

Of Malt-gaug-
 ing.

IN the Year 1696, when the Parliament laid a Duty of 6*d*. A Winchester
per Busbel upon *Malt* made in *England*, either for *public* or *Busbel*, what.
private Use; it was then also ordered, that the *Busbel* should
 contain 18 $\frac{1}{2}$ *Inches Diameter* throughout, and 8 *Inches* deep, with
 a *plane* and *even Bottom*; and that this should be deemed a
legal Winchester Busbel, by which all *Barley* or *Malt* should be
 gauged; the *Cubic Inches* in this *Busbel* are thus found.

As 1 is to 3.14159, so is 18.5 to 58.119415, the *Circumference*. The *Cubic*
Half the Circumference 29.0597075 \times *Diameter* 2.25 = *Inches* how
 268.802294375 the *Area* \times *Depth* 8 *Inches* = 2150.418355 *found*.
 the *square Inches* in a *legal Winchester Busbel*. See *Page* 48.

Now, 2150.418355 \times 1.2732406 = 2737.99995657121:
 But I have all along omitted the *Fraction*, and increased the
 whole Number *one Unit*; so that 2738 may safely be taken
 for a *Divisor* for a *circular Malt Busbel*; and their *square* Of the Divisor
Roots are 46.37, and 52.32 the *Gauge Points*, as inserted in and *Gauge Point*
 the *Table*, *Page* 51. But that you may have a *Busbel* and its for a *Circular*
Parts, with their *Divisors* and *Gauge Points* ready at hand, *Malt Busbel*, See
 take them in this *Table*. *Page* 51.

A

* This 268.8 is the *Area* of the *Winchester Busbel*.

A TABLE of Divisors and Gauge Points for Corn or Malt.

A Table of Divisors and Gauge Points for Malt, either square or circular.

See dry Measure on Page 6.

For a SQUARE.			For a CIRCLE.		
A Bushel and its Parts	Divisors.	Gauge-Points.	A Bushel and its Parts.	Divisors.	Gauge-Points.
Bushel	2150.4184	46.37	Bushel	2737.9995	52.32
$\frac{1}{2}$ Bushel	1075.2092	32.79	$\frac{1}{2}$ Bushel	1368.9998	36.99
Peck	537.6046	23.18	Peck	684.4999	26.16
$\frac{1}{2}$ Peck	268.8023	16.39	$\frac{1}{2}$ Gall.	342.2499	18.49
$\frac{1}{4}$ Peck	137.4011	11.59	$\frac{1}{4}$ Peck	171.1249	13.08
$\frac{1}{8}$ Peck	67.2005	8.19	$\frac{1}{8}$ Peck	85.5624	9.25

The Use of the Table.

The Use of the above Table is to examine any *Bushel*, *Half Bushel*, *Peck*, &c. whether they be true Measure according to the Standard now remaining in his Majesty's Exchequer: For, take the *Depth* and *Diameter* (suppose the *Half Bushel*) then, As the *Gauge-Point* 36.99 on D, is to the *Depth* on C, so is the *Diameter* on D to I on C, if it be true Measure.

Of gauging Cisterns, Couches, and Floors.

I have shewn, as I went on in this Treatise, how to find the *Area* and *Content* of every Figure in *Malt Bushels*; therefore it needs not be here repeated: It remains now to shew how to gauge *Cisterns*, *Couches*, and *Floors*, and from whence the *Charge* arises.

Of the Swelling of Barley in the Cistern.

When the *Barley* is wet, or steeped in the *Cistern*, it swells, and is about *one-fifth* Part more than when first put in; that is, *four Bushels* in *twenty* is to be allowed in the *Cistern* and *Couch*; and to find a *Multiplicator* to give the *net Duty* from *Cistern* or *Couch*, this is

The Rule.

The RULE.

$21 - \frac{1}{5} = \frac{4}{5}$ whose Decimal is .8.

See the Work at large.

From 20

Subtract $\frac{4}{5}$ equal to $\frac{1}{5}$ of 20.

Remains 16 equal to $\frac{4}{5}$, which is reduced to a Decimal,

Thus:

$5) 4.0 (.8$

So

* Because two Gallons are one Peck, I call the *Half Peck* in the *Circular Measure* one Gallon.

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So that any Number of *gross* Bushels from *Cistern* or *Couch* multiplied by .8, will give the *net* Bushels.

Example. Suppose a *Cistern's* *Length* 85 Inches, *Breadth* 54.4 Inches, and *Depth* 36 Inches, and just before the draining of it, it is Gauge exactly full: What is the *Content* and *net* Bushels?

$85 \times 54.4 \times 36 = 166464$ solid Inches, divide by 2150.4
 $= 77.4$ Bushels gross $\times .8 = 61.92$ net Bushels.

By the *Sliding Rule*.

As the *Depth* of the *Cistern*, &c. on the *Line MD*,
 Is to the *Length*, or *Breadth*, on the *Line of Numbers* on
 the *Slider* marked *N*;
 So is the *Length*, or *Breadth*, on *A*,
 To the *Content* on *B*.

By the *Sliding Rule*.

MD N A B

As 36 is to 85, so is 54.4 to 77.4 Bushels gross.

Depth Length Breadth Content

The same Order is to be observed in casting up *Couch* and *Floor-Gauges* by the *Rule*.

Note. You are to set your *Cisterns* upon *Areas*, with the
Length, *Breadth*, and *Depth*, in the proper Column in your
Malt-Book, thus:

Depth 36
Length 85 } *Inches*
Breadth 54.4
Area 2.15 Bushels.

Now, the *Area* multiplied by the *Depth* 36 give the *Content*
 as before equal to 77.4.

How to gauge a *Couch*.

With your *Tape* take the *Length* and *Breadth* of the *Couch*,
 which you must insert in your *Book*; but before you take
 your *Depth*, observe, that *Corn* being a dry Substance, the *Top*
 of the *Couch*, &c. does not always carry an even Surface, care
 must therefore be taken that the *Barley* or *Malt* lie even:
 Then with your *Dimension Cone* and *Brass Plate* take six, eight,
 or ten *Depths* (as shewed in gauging the *Cooler*, Page 131)
 more or less, as you shall see Occasion: Divide the *Sum* of
 them by the *Number* of *Depths*, gives a *mean Depth*, which in-
 sert in your *Malt-Book*.

How to know when it is a *Couch*, and when a *Floor*.

When you come into the *Malt-House*, you must enquire of
 the *Malster*, how long the *Barley* has been out of the *Cistern*:
 If it is under thirty Hours, it is deemed by the Law a *Couch*,
 which, Art. 4.

What a *Couch*,
 and what a *Floor*
 See the Instruc-
 tions relating to
 the Duty on Malt

which must be gauged, and the Allowance of *four* Bushels in *twenty* given, as was shewed in the Cistern: But if he declares the Barley has been out of the Cistern more than *thirty* Hours, it is to be taken as a *Floor*, and the Allowance made of *ten* Bushels in *twenty*: And then it remains a *Floor* till it comes to the *Kiln* to be dried.

A Multiplier for net Floor Bushels.

In order to find a *Multiplier* that will give the *net* Bushels from the *Floor*; observe that 10 Bushels in 20 being allowed for the *spritting* or *growing* of the Malt, it will be this Decimal, .5 for the *Multiplier*, that will reduce the *gross* Bushels on the *Floor*, to the *net* Bushels.

How to take Floor Gauges.

How to take Floor Gauges.

A *Floor Gauge* is taken in all respects as a *Couch Gauge* before directed; and cast up by the *Sliding Rule* the same way as a *Couch*, by the *MD Line* above taught. Then let us suppose a *Floor Gauge* when cast up and multiplied by .5, to exceed the *Cistern*, or *Couch Gauge* of the same Barley, when multiplied by .8, then I say the Charge arises from such *Floor*; but when the *Cistern* or *Couch* is most, then you must make the Charge from that accordingly.

Whence the Charge will arise.

How to distinguish whether the Charge will arise from the Cistern, the Couch, or the Floor Gauge.

The usual Way of finding whether the Amount of the *Cistern* or *Couch*, (allowing 4 in 20, that is, $\frac{1}{5}$ Part) or the Amount of the *Floor* (allowing 10 in 20) makes the *best* Charge, is to multiply the *Cistern* or *Couch* Bushels by 1.6, and the *Product* will be a Number of *Floor Bushels*, equal in Charge to those *Couch*, &c. Bushels.

Or,

Another Rule.

Multiply the *Floor Bushels* by .625, and the *Product* will be the Number of *Couch Bushels* equal in Charge to those *Floor Bushels*.

How the two Factors are found.

How the Factors are found.

These two *Multipliers* are found thus, viz. the Allowance of 4 in 20 is found before to be equal to .8, and of 10 in 20 to .5. Therefore,

As .5 is to .8, so is 1 to 1.6: And as 8 is to .5, so is 1 to .625.

Or, By dividing of *Unity*, thus:

.625) 1.000 (1.6 1.6) 1.0000 (.625

Now,

Now let us suppose a *Floor Gauge* to be 100.8 *Busbels*, and the same from the *best Couch Gauge* 63.6; I demand from whence the *Charge* will arise?

$100.8 \times .625 = 63$ *Busbels*, which is less than the *Couch*; therefore the *Charge* doth arise from the *Couch*.

How to gauge circular Cisterns, Couches, or Floors.

It frequently happens that *Maltsters* wet their *Barley* in a *Of Circular Cif-*
round or elliptical Tub; which, if it be regular, you may set *terns, Couches,*
upon a *mean Diameter*, otherwise upon *two or three*, as you *and Floors.*
shall see *Occasion*: And if it is *elliptical*, you must take the *cross*
Diameters, and insert them in your *Malt-Book* as a *By-Tub*.

Then if it is a *Circle*, the *Square of the Diameter*, multiplied
by .0003653, or divided by 2738 (see *Page 51.*) will be the
Area in *Malt Busbels*; which multiplied by the *Depth*, gives
the *Content*.

How to gauge a By-Tub: By the Sliding Rule.

To gauge a By-Tub.

On the Lines C and D.

As the *Gauge-Point* on D = 52.32, marked MR,

Is to *Unity* on C;

So is the *Diameter* on D,

To the *Area* on C.

Here note, That if the *Diameter* be less than 52.32 *Inches*,
then the *Area* will be less than one *Busbel*.

For the *Content*.

As the *Gauge-Point* 52.32 on D,

Is to the *Depth* on C;

So is the *Diameter* on D,

To the *Content* in *Malt Busbels* on C.

The Use of the *Square Gauge-Points* in the *TABLE*,

Of *Square Gauge Points*,

Page 51. is this:

Having a *Square* or *Oblong Cistern*, *Couch* or *Floor*, the
Gauges thereon depending may be cast up by the *Sliding Rule*
on the Lines C and D.

For as the *Gauge Point* 46.37 on D, marked MS,

Is to the *Depth* on C;

So is the *Side of the Square* (or *Mean* if an *Oblong*) on D,

To the *Content* in *Malt-Busbels* on C.

An Example.

Example. In the Cistern above (which we gauged by the Line of Malt Depth) whose Length is 85, Breadth 54.4, and Depth 36 Inches; what is the Content?

First, the Mean between the Length 85, and Breadth 54.4, is 68. Then,

D	C	D	C
As 46.17	is to 36,	so is 68	to 77.4,
G. Point	Depth	Mean	

Bushels, as before, when cast up by the Line called the Malt Depth, marked MD.

How to money your Charges.

How the Officers of Excise are to money their Charge.

The Officers of his Majesty's Revenue of Excise make up their *Accounts* against each *setting Day* by help of certain *Tables*, (which you will find in *Chap. V.* of the *Second Part* of this Work) one of which is calculated for the *Cistern* and *Couch Gauges*, and the other for the *Floor*, each of them giving the proper Allowance.

Charged from the	{	Couch	63	l.	1	17	9 $\frac{1}{2}$
		Floor	100	l.	1	17	60

Cash	l.	3	15	3 $\frac{1}{2}$
------	----	---	----	-----------------

A Note.

Note, The *Decimal Parts* of a *Bushel* are never charged, but carried forward to the next Book.

A Caution.

The Law having given the Allowance of four Bushels in twenty on the *Cistern* and *Couch Gauges*, and ten in twenty on the *Floor*; therefore if an Officer do not advance in his Gauges according to these Proportions, he must expect to incur the Honourable Commissioners highest Displeasure. How shall he examine his Gauges in this Case? This is

The RULE.

The Rule for examining your Gauges.

Subtract the first *Cistern Gauge* from the best Gauge. If this Difference be $\frac{1}{2}$ of the first Gauge in the Cistern, then you have advanced according to Law; otherwise not: But in this Case you ought to take the First Gauge in the Cistern of the dry Barley, or very speedily after it is wet: And if the Barley be damaged, the best Gauge will not advance $\frac{1}{2}$ above the dry Barley; but if the Barley be very good, it will advance above $\frac{1}{2}$ Part, as I have often by Experience found to be true.

An Example.

Example. Admit a Cistern whose Area is .86, in which you have a Gauge of Barley one Hour wet, Depth 16, Content 13.8 Bushels, and the best Gauge 15 Bushels from the Couch; I demand what is the Advance; whether $\frac{1}{2}$ according to Law, more or less?

15—13.8 = 1.2, which should be $2.77 = \frac{1}{5}$ of 13.8, which is too little by 1.57. For this you must write a Reason of damaged Barley, or the like; otherways your Supervisor will Diary you for such a Fault.

By the Sliding Rule.

First, Take $\frac{1}{5}$ of 1, which is .2, by which multiply the first Cistern Gauge, and the Product is $\frac{1}{5}$ of it. By the Sliding Rule.

A B A B

As 1 is to .2, so is 13.8 to 2.77, this added to 13.8 = 16.57, which the best Gauge should have been, had it advanced four Bushels in twenty, or $\frac{1}{5}$.

How the Cash-Tables are made.

The Cash-Tables for moneying the Cistern and Couch Gauges, are thus made: Cash-Tables, how made.

Bush. d. Bush d. q.

If 1 : 9 :: .8 : 7 0.8, this is the first Number in the Table; which added continually to itself, and so on, compleats that Table.

For the Floor.

If 1 : 9 :: .5 : 4 $\frac{1}{2}$, this is the first Number in the Table; which added continually, compleats that Table.

Every one making Malt for his Family-Use only, has Liberty to compound at 5s. per Head.

See Part II. Chap. IV.

CHAP XXX.

Of CANDLES.

Of Candles.

THE Duty upon Candles made of Tallow is a Penny a Pound, and upon Candles made of Wax, Eight-Pence a Pound, and all other Candles imported, made of Tallow or Wax, are liable to the same Duty, viz. the first of May 1710, Tallow Candles became chargeable with a Duty of a Half-penny a Pound, and Wax Candles with a Duty of Four Pence a Pound; and upon the 25th of March, 1711, the former became subject to an additional Duty of a Half-penny a Pound, and the latter to an additional Duty of Four-pence a Pound.

The Duty on Wax and Tallow Candles.

8 Anne, Ch. 9.

9 Anne, Ch. 9.

Note, Small Rush-Lights once dipt, are not chargeable. Rush-Lights.

The above Duties were laid for 32 Years, but were afterwards made perpetual.

Candles exported. 3 Geo. I. Cap. 7. Hours for working.

All Candles exported are to be re-allowed the Duty paid, but such Candles being re-landed, are forfeited.

The Statute Hours for working, under the Penalty of Ten Pounds, are from 7 in the Morning till 5 in the Evening, betwixt the 29th of September and the 25th of March; and from 5 in the Morning till 7 in the Evening, betwixt the 25th of March, and the 29th of September.

The Cubic Inches in a Pound of Tallow. See Page 47.

It has been found that 30.28 Cubic Inches are contained in one Pound of dry Tallow Avoirdupoise, and therefore is a Divisor in all square Measure; which multiplied by 1.2732406, produceth 38.55, the Divisor for circular Measure, whose Square Root is 6.208, the Gauge Point on the Sliding Rule, and is marked with T. P. on the Line D, signifying Tallow Pounds. And there are contained in an Ale Gallon 149 Ounces of dry Tallow Avoirdupoise Weight; so that if any Gauge of Tallow be cast up as an Ale Gauge, the Total multiplied by 9.3125, (which are the Pounds and Parts in a Gallon) will give the Content: This Number 9.3125 is found thus:

oz.	lib.	oz.	lib.
As 16	is to 1,	so is 149	to 9.3125.

Note, That 108 Pounds can only be charged in Candles for every 112 Pounds of Tallow missing; therefore multiply the Quantity of Tallow missing by this Decimal .964, and the Product will give the net Weight or Quantity that is to be charged.

This Decimal .964 is thus found:

As 112 is to 1, so is 108 to .964.

A Note.

Note, Any Family may compound at 1s. per Head, for Candles made for their own Use.

See the Second Part, Chap. XI.

CH A P. XXXI.

Of the Distillery

Of the DISTILLERY.

It is the most curious Part of Gauging.

DISTILLERY is the very Apex, or highest Pitch that can be arrived at by Man in Gauging; for it is not only required, that he should be very expert in Gauging, but also in the Manner of Book-keeping, and making up the Accounts; which is more difficult than any other Branch of this Art.

Some Officers never instructed in it.

Hence, because every Officer of Excise (I well know) is not instructed in the Distillery, neither has an Opportunity of seeing any

any thing of it in all his Days ; by what follows he may come to have some small Notion, if not become a perfect Master of that abstruse Art.

The Materials, &c. used by Distillers, are characterized as follow :

For Melasses	—	M.	There are some other Characters, viz. For a Still.	Characters for Distiller's Materials.
For Malt	—	G.		
For Cyder	—	C.		
For Sugar-Water	—	S. W.	Not come down	— — — — —
Scums	—	S.	Newly come down	— — — — —
For Foreign Fruit	—	F.	About half down	— — — — —
For Brewers Wash or Tilt.B.	—	B.	Near off	— — — — —
For Wine	—	W.	Quite off	— — — — —
For Low Wine	—	L. W.		

How to gauge a Still, has been shewn on Pages 143 and 146.

By the Tenth and Eleventh of William III. and Fourth of Anne, it is enacted : Directions for charging Distillers.

“ That all Wash made of Melasses for Distillation shall be charged with one fourth Part into Low Wines, and two third Parts of such Low Wines into Spirits.”

Also, “ That all Wash from Malt or Malted Corn shall be charged with one fourth Part into Low Wines, and three fifth Parts of such Low Wines into Spirits.”

And, “ That all Wash made from Cyder or Perry be charged with one fifth Part into Low Wines, and one half such Low Wines into Spirits.”

“ All Spirits made or drawn by any Distiller from any Mixture of Spirits with any kind of Wash (except Common Water) shall be deemed and taken to be Low Wines, and shall be charged with the Duties already set and imposed upon Low Wines drawn from Foreign Materials.”

“ Gaugers shall keep an Account of all Melasses Wash (in Distiller's Hands ; and upon Decrease thereof, charge so much Low Wines as $\frac{1}{4}$ Part of the Wash shall amount to ; and charge him with so much Proof Spirits as two thirds of the Low Wines so charged shall amount to.”

“ Gaugers shall also charge $\frac{1}{4}$ Low Wines from the Decrease of Malt Wash, and three fifths of Spirits from such Low Wines ; and one fifth of Low Wines from the Decrease of Cyder or Perry Wash ; and $\frac{1}{2}$ of Spirits from such Low Wines.

“ Note, Melasses Wash decreases $\frac{1}{4}$ into Low Wines, and such Low Wines two thirds into Spirits.

“ Officers wilfully charging Low Wines as from Corn, knowing them to be such, forfeit their Office, and 10s. per Gallon.”

Hours for Carrying out Liquors. *The Statute Hours for Distillers carrying out any Liquors, under the Penalty of 10l. are from 3 in the Morning to 9 at Night, betwixt the 25th of March and the 29th of September; and from 5 in the Morning to 8 at Night, from the 29th of September to the 25th of March.*

Of the Fractions marked in the Act,

The Fractions mentioned in the Act are these, and are also reduced to Decimals.

$$\text{Vulgar Fractions} \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{2}{3} \\ \frac{3}{5} \\ \frac{1}{3} \\ \frac{1}{2} \end{array} \right\} \text{the Decimals are} \left\{ \begin{array}{l} .25 \\ .666 \\ .6 \\ .2 \\ .5 \end{array} \right\} \text{Factors.}$$

That is,

From Malted Corn $\frac{1}{4}$ and $\frac{2}{3}$.

From Cyder and Perry $\frac{1}{5}$ and $\frac{1}{2}$.

From Melasses $\frac{1}{4}$ and $\frac{2}{3}$.

From all English Materials, as Cyder, Perry, Turnips, &c. $\frac{1}{5}$ and $\frac{1}{2}$.

For Melasses Wash.

Now you are to observe that any Quantity of Melasses Wash, being multiplied by .25, gives Low Wines; and Low Wines multiplied by .666 gives Spirits.

For Malt Wash,

And any Quantity of Malt Wash being multiplied by .25, gives Low Wines; and such Low Wines being multiplied by .6, give Spirits.

For Cyder and Perry Wash.

Lastly, And any Quantity of Wash from Cyder or Perry, being multiplied by .2, gives Low Wines; and such Low Wines multiplied by .5 give Spirits.

The Reader will find all these Rules exemplified in the Course of this Chapter.

How the Officer is to make his Surveys.

The first Thing that you do in the Morning is to go to the Still-House to see if they be at Work. If they be not, then in the Still Column of your Minute Book, write silent. And then take an Account of the Wash Backs; and put the Depths down distinctly in their proper Columns.

In the Morning, if you find the Distiller at work, observe what he is stilling, whether Melasses Wash, Malt Wash, or Low Wines. If he be stilling Wash, then for every Still that there is at Work, put A in that Still's Column, if two Stills at work, put two A's thus, AA: But if he be stilling Low Wines, then for every Still at work, write so many B's: But if two Stills at work, the one stilling Melasses Wash, and the other stilling Low Wines, then write A and B; when you find them stilling Spirits, which is called Rectifying, under that Still write R. But you are not to make any Charge from

from any such Spirits distilled, though it may do well to take an Account of what the Spirits come out of, and also what they go into, when distilled. When you find them stilling Wash, put the Number of the Wash Back down in your Minute Book, and the Depth under it thus, $\frac{1}{2}$; that is, Wash out of Number 4, and there remains 12 Inches deep in the Wash Back when the Still was charged or filled. These are inserted in the Column entitled Wash out of; and then put also the Depth of the Wash Back down in its proper Column under Wash Back.

In Foot Walks, they usually make four Surveys every Day, Of Foot Walks, (work or not) To each Survey you must enter the Hour, and also the Stock of the Wash Backs, and enquire what Low Wines go into it. Take the Depth, and put it under the Number it goes into thus, $\frac{1}{2}$. So you must do every Survey; and when you find the Still off, write in that Still's Column, off.

How to cast up your Day's Survey.

Every Night you are to take your last Survey out of your Minute Book into your Stock Book, with the Day of the Month, a Day's Work. Week, and Hour, and the Depth of each Wash Back, and place them in their proper Columns; and also the same Letter of the Alphabet that is in your Minute Book, with the Depth of the Faints, if any; and also the Depth of the Low Wines.

Now having the last Survey transcribed from your Minute Book to your Stock Book, then the next thing is to place the Wash taken out of the Minute Book in its proper Place, and multiply the Depth of Decrease of Wash by the Area of the Back it went out of; the Product is the Decrease of Wash that went out of that Back; which place in the Minute Book under Decrease of Wash, over-against the Cask it went out of. Do thus by all the Backs that Wash went out of that Day.

Then place the Number of the Casks that Low Wines come into that Day in your Minute Book. Which done, find what Low Wines came into that Cask by ullaging of it, which place in your Minute Book over-against the Cask that it went into. Do so by all the Casks that Low Wines go into that Day, and add all the Increases of Low Wines, which together give you the Day's Work.

How to make your Charge of Melasses Wash.

Having cast up your Day's Work, and found the Decrease Of charging of Wash, and Increase of Low Wines, and placed them in their Melasses Wash, proper Columns in the Minute Book, and from thence transferred them to your Stock Book. The next thing is,

How to make your Charge.

How to make
your Charge.

Find $\frac{1}{4}$ Part of your *Decrease of Wash*, and if that be less than the *Increase of Low Wines*, then will the *Increase of Low Wines* be your *Charge*, and you must write *per Gauge* in the Column where you give the *Reason* for the *Charge*. But if $\frac{1}{4}$ of the *Decrease of Wash* exceeds the *Increase of Low Wines*, then will that be your *Charge of Low Wines*; and so much as $\frac{1}{4}$ of the *Wash* exceeds the *Increase of Low Wines*, the $\frac{2}{3}$ of such Excess is presumed to be decreased, and must be charged as so much *Spirits* of the second *Extraction*.

Example.

Example. Admit the *Decrease of Wash* be 334.6 Gallons, and the *Increase of Low Wines* 75.7 Gallons.—Since $\frac{1}{4}$ of 334.6 is 83.65, and more than the *Increase of Low Wines*, that must be your *Charge of Low Wines*: And the *Difference* between 83.65 and 75.7 is 7.95, which is presumed to be decreased, and is to be entered in the Column for the *Decrease of Low Wines*, thus, *pre* 7.95; $\frac{2}{3}$ whereof is 5.3, which must be charged as *Spirits*.—But here let it be minded, that the 75.7, the *Increase of Low Wines*, are supposed to remain in *Stock*, which when decreased you must charge the $\frac{2}{3}$ thereof into *Spirits*, which you will find to be 50.46; but if the *Decrease* was found on the same Day as the *Increase*, then must your *presumptive* and *visible* Decreases be added together, and $\frac{2}{3}$ of the Sum be taken for your *Charge of Spirits*. In this Instance it will be $7.95 + 75.7 = 83.65$; $\frac{2}{3}$ of which is 55.76, which is the same as $5.3 + 50.46$.—But here take Notice, that if your *Gauge of Spirits* exceed the $\frac{2}{3}$ of the *Decrease of Low Wines*, then will your *Charge* arise from *Gauge*; but in this Case you must be very exact in adjusting the *Proof*.

To charge from
Malt-Wash.

How to make your Charge from Malt-Wash, which is one Fourth into Low Wines, and three Fifths into Spirits.

There is no other Difference in bringing forward your Charges between *Malt-Wash* and *Melassis-Wash*, than to observe the different *Proportions* which the Law hath fixed to ascertain the *Lengths* of each; but although the above Example may be sufficient to shew the general Method in all Cases that can occur, yet it may not be amiss to give an Example from *Malt-Wash*, &c.

Example.

Example. Let the *Decrease of Wash* be 406 Gallons, and the *Increase of Low Wines* 98.4; what will be the *Charge of Low Wines and Spirits*?

$\frac{1}{4}$ of 406 is 101.5, which exceeds 98.4 by 3.1; this 3.1 is presumed to be decreased, and therefore must be entered in

in the Column for *Decrease of Low Wines*; $\frac{3}{5}$ Parts whereof, or .6, (*the common Multiplier*) which is the same, is 1.86 for the *Charge of Spirits*.—But here as before, in the Example for *Melasses Wash*, with this Difference only, that here $\frac{3}{5}$ of 98.4 must be taken upon the *Decrease*, as in the other $\frac{3}{5}$ for your *Charge of Spirits* upon whatever Day the *Decrease* is made, and in this Instance it will be 59.04 Gallons of *Spirits*.

How to make a Charge from English Materials such as Cyder and Perry, which are one Fifth, and one Half. To charge from English Materials.

All that is to be observed in this Case is, that instead of taking $\frac{1}{4}$ and $\frac{2}{3}$, and $\frac{1}{4}$ and $\frac{2}{3}$ of the *Decrease of Wash* as above, you must here take $\frac{1}{5}$ of the *Decrease of Wash* for your *Charge of Low Wines*, and $\frac{1}{2}$ of the *Low Wines* into *Spirits*, if you cannot charge more of either by Gauge.

Example. Suppose the *Decrease of Wash* be 357.5 Gallons, An Example. and the *Increase of Low Wines* 68.7; what will be the *Charge of Low Wines and Spirits*?

Here $\frac{1}{5}$ of the *Decrease of Wash* is 71.5, which exceeds the *Increase of Low Wines* by 2.8, which is presumed to be decreased, the $\frac{1}{2}$ of which is 1.4 for the *Charge of Spirits*.—But upon the *Decrease of* 68.7, the *Low Wines in Stock*, you must charge its $\frac{1}{2}$ into *Spirits*, viz. 34.35.

N. B. Though I have taken Notice above of the Decimal Parts of Wash, yet in Practice they are never regarded; and therefore, the Decimal Parts of Low Wines will always be .25 .5 .75 = to 1, 2, or 3 Quarts.

See Second Part, Chap. VI.

Of mixing Liquors, &c. of different Qualities.

The RULE.

Of mixing Liquors.
The Rule.

The Difference betwixt the greatest Price, and the given Price, is the Quantity of the worst Liquor: And the Difference betwixt the given Price, and the smallest Price, is the Quantity of the best Liquors.

Example. I have Brandy at 4s. 6d. the Gallon, and I have Brandy at 9s. the Gallon, now I would so mix these Brandy as to sell it at 7s. 6d. per Gallon. I demand in what Proportion I am to mix them to sell at that Price?

The

The *greatest* Price is 9^s
 The *given* Price $7\frac{1}{2}$

The *given* Price $7\frac{1}{2}^s$
 The *smallest* Price $4\frac{1}{2}$

Of the *worst* Liquor $1\frac{1}{2}$

Of the *best* Liquor 3 Gal.

And thus I find there must be put 3 Gallons of the *best* Brandy to $1\frac{1}{2}$ Gallon of the *worst* Brandy: Or which is the same thing, 2 Gallons of the *best* to 1 Gallon of the *worst*.

To find the Quantity.

The Quantity of the Mixture and its Price, and the Price of each Liquor being given; to find the Quantity of each to be mixed.

The Rule.

The RULE.

Multiply the given Quantity, by the Difference betwixt the Prices of it, and that of the *worst* Liquor, and divide the Product by the Difference betwixt the *best* and *worst* Price, and the Quotient will be the Quantity of the *best* Liquor.

An Example.

Example. Let it be required to mix 40 Gallons of Rum at 8s. 6d. with Rum at 3s. 9d. so as to sell it at the Rate of 5s. 4d. the Gallon.

$s. d.$
 The *given* Price 5 4
 The *worst* Price 3 9

$s. d.$
 The *greatest* Price 8 6
 The *worst* Price 3 9

1 7 or 19d.

4 9 or 57d.

The given Quantity 40 Gallons.

19
 —
 360
 40
 —

57) 760 ($13\frac{1}{3}$ of the *best* Rum.

57
 —
 190
 171
 —

19

And thus I find that in 40 Gallons of this Mixture there must be put $13\frac{1}{3}$, or $13\frac{1}{3}$ Gallons of the *best* Rum.

C H A P. XXXII.

How to measure the different Gravity of Liquors, which shews the different Strengths thereof: Also a Table of Specific Gravity. Together with such Observations concerning the Scales or Balance, as every Excise-Officer ought to be acquainted with.

See Plate I. Fig. A.

THERE is an Instrument made of *Glass* or *Ivory*, &c. Of the Areometer about $3\frac{1}{2}$ or 4 Inches long, called an AREOMETER, and its Use. there being as much *Quicksilver* in the Bottom at B, as will serve to keep it swimming in an erect Position. The Stem is divided into *Degrees*, and by the Depth of its Descent in any Liquor, its *Lightness* is concluded: For that Fluid or Liquor, in which it sinks least, must be *heaviest*: because the greater the Gravity the stronger the Liquor, and the less the Gravity the weaker the Liquor. You may make one for common Use of any Wood, about $\frac{3}{4}$ of an Inch Diameter at the Bottom, and terminating in a Conical Point at the Top, putting as much Lead in the Bottom as will keep it upright, when in the Liquor.

To find the Specific Gravity of a Fluid.

On one Arm of a Balance suspend a leaden Globe: and For the Specific to the other, fasten a Weight, which is in equilibrium there- Gravity. with in the Air. Immerse the Globe successively in several Fluids, whose Specific Gravities are to be determined, and observe the Weight that balances it in each. These several Weights, subtracted severally from the first Weight, the Remainders are the Parts of the Weight lost in each Fluid. Whence the Ratio of the Specific Gravities of the Fluids is known.

Hence, because the *Densities* are, as the specific Gravities, we find the Ratio of the *Densities* of the Fluids at the same Time.

This Problem is of great use; as by it the Degree of Purity or Goodness of Fluids is easily found; a thing not only serviceable in natural Philosophy, but also in common Life, and in the Practice of Physic.

A TABLE

A TABLE of SPECIFIC GRAVITY, an Ounce the Integer.

Names.	Ounces and Decimal	Troy.	Ounces and	Avoir-
	Parts Troy.	oz. <i>pw.</i> gr.	Decim. Pts. Avoirdup.	dupoise. oz. dr.
Fine Gold, is	10.359273	10 7 4	11.365602	11 5.8
Standard Gold	9.962625	9 19 6	10.930422	10 10.9
Quickfilver	7.384411	7 7 16	8.101753	8 1.6
Lead	5.984010	5 19 6	6.553885	6 8.9
Fine Silver	5.850035	5 17 0	6.418324	6 6.7
Standard Silver	5.556769	5 11 3	6.096569	6 1.4
Rose Copper	4.747121	4 14 23	5.208369	5 3.3
Plate Brads	4.404273	4 8 2	4.832116	4 13.3
Cast Brads	4.272409	4 5 11	4.630300	4 10.1
Steel	4.142217	4 2 8	4.544505	4 8.7
Common Iron	4.031361	4 0 15	4.422979	4 6.8
Block Tin	3.861519	3 17 6	4.236638	4 3.8
Fine Marble	1.429411	1 8 14	1.568859	1 9.3
Common Glafs	1.360841	1 7 5	1.493037	1 7.9
Alabaſter	0.988456	0 19 8	1.084477	1 1.4
Dry Ivory	0.962083	0 19 6	1.055542	1 0.9
London brew'd Ale	0.562786	0 11 6	0.609929	0 9.8
Dry Box Wood	0.543282	0 10 21	0.596057	0 9.5
Beer Vinegar	0.545392	0 10 22	0.591070	0 9.5
Sack	0.544864	0 10 22	0.590506	0 9.4
Milk	0.543809	0 10 21	0.589362	0 9.4
Urine	0.543282	0 10 21	0.588791	0 9.4
College plain Ale	0.542227	0 10 20	0.587648	0 9.4
See Water, clear	0.542742	0 10 21	0.594894	0 9.5
Pump Water	0.527458	0 10 13	0.578697	0 9.3
Claret	0.423766	0 10 11	0.574646	0 9.2
Linſeed Oil	0.491591	0 9 20	0.539345	0 8.6
Proof Spirits, Brandy	0.489268	0 9 19	0.536796	0 8.6
Sound Dry Oak	0.489008	0 9 19	0.536569	0 8.6
Oil Olive	0.481569	0 9 15	0.528350	0 8.5
Oil of Turpentine	0.383680	0 7 16	0.415820	0 6.7
Half a Pint of Muſ- tard ſeed weighs				6 1.5

One Cubic Inch of

The

The Weight of a Cubic Foot of several Bodies, Avoirdupoise Weight, in Pounds and Decimal Parts, &c.

	lb.	lb. oz. dr.
Gravel	109.3125	109 5
Common Sand	85.25	85 4
Newcastle Coal	67.75	67 12
Pump Water	62.7734375	62 12 6.4
Wood Ashes	58.3125	58 5
Bay Salt	54.0625	54 1
White Peas	50.5	50 8
Field Beans	50.5	50 8
Wheat of the best Sort	48.5	48 8
White Sea Salt	43.75	43 12
Barley	41.125	41 2
Wheaten Meal unfifted	31.	31 0
Malt, two Months old	30.25	30 4
White Oats	29.5	29 8
Rye Meal unfifted	28.	28 0

Table of a Cubic Foot.

The Use of the Tables of SPECIFIC GRAVITY.

These Tables are of excellent Use ; for, by knowing the *Use of the Tables.*
solid Inches or Feet, we can tell the *Weight*, or, by having the *Weight*, we can tell how many *solid Feet or Inches* are contained in any Quantity, &c.

Example. There is a Bar of Iron, in Length 156 Inches, Example 1.
 and 1 Inch square: I desire to know how many Pounds
 Avoirdupoise doth it weigh?

Operation.

The Tabular Number in }
 Ounces Avoirdupoise, is } 4.422979
 The Length in Inches is } 156

26537874
 22114895
 4422979

lb.

16) 689.98472400 (43.12404525.

The Operation.

The Value of this Fraction .12404525 lb. is 1 Ounce, and
 .984724 Parts of an Ounce. So that the Iron weighed 43lb.
 1.984724 oz.

Again:

Example 2.

Again, Suppose a Bar of Iron weigh 43lb. 1.984724 oz. I demand how many solid Feet it contains?

This is but the Reverse of the former Question; for say,

As 4.422979 Ounces give one Inch, what will 43lb. 1.984724 Ounces give?

Work by the Single Rule of Three direct, as is taught in Page 20, and the Answer will come out .0902 Decimal Parts of a solid Foot.

The Operation.

See the Work.

oz.	Inch.	£.	oz.
As 4.422979	is to 1,	so is 43	1.984724
		16	

259

43

1728)

4.422979) 689.984724 (1560000) .0902

That is, something less than Half a Quarter of a Foot.

ATun of Brandy
2000lb. Weight.

It is a common received Opinion amongst Distillers, that four Hogheads or one Tun (equal to 252 Gallons) of Brandy, weighs 2000 lb. Weight *Avoirdupoise*; how this agrees with our Tables, we will thus examine.

First, In one Gallon there are 231 Cubic Inches, which multiplied by 252 Gallons, produceth 58212 Cubic Inches in a Tun; which multiply by .536796 (the Tabular Number of one Inch of Proof Spirits *Avoirdupoise*) produces 31247.968752 Ounces, which divided by 16, (the Ounces in a Pound) the Quotient is 1952.998047 Pounds, which you see is something less than 2000; but then, by allowing the Difference for the Tare, or Weight of the Cask, when empty, their Number 2000 is pretty near the Truth.

To prevent Im-
positions by
Vintners, Distil-
lers, &c.

Hence also you may most accurately discover whether you are imposed upon by the Merchant, Vintner, or Distiller, &c. in the Qualities of Wine or Spirits, which you have bought on the Credit of the Sample that was shewed you to examine; for, if you find that the Specific Gravity of the whole Vessel sent you home is different from that Parcel which you tried or examined, you may be assured it is some way mixt and adulterated.

Example 3.

Example 3. What is the *Avoirdupoise* Weight of a Barrel of London-brewed Ale, which contains 32 Gallons?

First, say, As 1 : 282 :: 32 : 9024.
Gal. Inch. Gal. Inch.

Again,

Ch. XXII. Of the Balance, or Scales.

207

Inches. Ounces. Inches. Ounces.
Again, say, If 1 : .609929 :: 9024 : 5503.999296, which
divided by 16, gives Pounds 343.999956 for Answer.

Example 4. What is the Weight of a Busbel of Wheat. Example 4.

Say,
Inches. Pounds. Inches. Pounds.
As 1728 is to 48.5, so is 2150.44 to 60.356 for Answer.

Note, If you would find what Weight any of these Bodies A Note, mentioned in the Table will have when immersed, or put into Water, you must subtract the Weight of an equal Quantity of Water, from the Weight of the proposed Body, (if it be heavier than Water,) and there will remain the Weight required.

As for Instance.

A Cubic Inch of common Iron is = 4.422979

A Cubic Inch of Pump Water is = 0.578697

Remains 3.844282 The Weight of a
Cubic Inch of Iron in Water.

The Duties upon Leather, Soap, Candles, Starch, Coffee, Tea, &c. being chargeable by Weight, I shall here instruct the young Officer how to guard against the Abuses the unfair Trader may put upon him, by using a false Balance, (which the Wise Man assures us) is an Abomination to the Lord, Prov. ii. 11.

Of the Balance, or Pair of Scales.

See Plate I. Fig. 20.

The essential Parts of a Balance are, (1.) the Beam, as A B ; (2.) the Axis of Motion, which divides the Beam into Parts, as C ; (3.) those Parts called the Arms or Brachia, as AC and CB, which may be either equal or unequal ; (4.) the Points of Suspension, as A, B, or Application ; i. e. the Points where the Weights really are, or the Scales in which the Weights are placed.

☞ When Weights hang freely from the Points of Suspension, they gravitate neither more nor less for hanging nearer or farther from the said Points.

The Balance serves to compare together Bodies which have equal Quantities of Matter, tho' sometimes differing in Bulk; for when the Commodities to be bought or sold, or pay Duty, are placed in one Scale, so as to keep the Weights in the opposite Scale in *Equilibrio*, the Quantities of their Motion are equal; and since the Velocities are equal, on account of the
equal

Of the Balance, or Scales. Part I.

equal Lengths or Distances AC and CB, the Quantities of Matter must be likewise equal; and this is shewn by the horizontal Position of the Beam.

When a Balance is in *Æquilibrio*, the Weights on each Side are said to *equiponderate*; for this it is requisite, that the Distances from the Center of Motion be reciprocally as the Weights, and in that Case if each Weight be multiplied by its Distance, the Products will be equal. *Gravesand's Mathem. Elements*, Book I. Page 30.

An Example. *Example*, Let the Length of each Arm of the Beam be = 14, and the Weights each = 12, it is plain, that $12 \times 14 = 168 = 12 \times 14$ on the other Arm.

If the Weights of any Body taken in each Scale of a Balance of unequal Arms be multiplied together, the Square Root of the Product is the Weight of the Body proposed.

An Example. *Example*. Admit the Weight of the Body in one Scale be 11, and the Weight of the same Body in the other Scale 12, the Square Root of the Product of these two Numbers will be 11.489, the true Weight of the Body proposed.

The Operation.

Operation.

$$\begin{array}{r}
 12 \\
 11 \\
 \hline
 132.000000 \quad (11.489 \\
 1 \\
 \hline
 21) \quad 32 \\
 \underline{21} \\
 11 \\
 224) \quad 1100 \\
 \underline{896} \\
 20400 \\
 2288) \quad 20400 \\
 \underline{18304} \\
 209600 \\
 22969) \quad 209600 \\
 \underline{206721} \\
 2879
 \end{array}$$

A Problem.

PROBLEM.

To make a deceitful Balance, or Pair of Scales, whose Beam will hang in *Æquilibrio* without the Scales, or with the empty Scales; and yet shall also be in *Æquilibrio* when unequal Weights are placed in the Scales; so as to cheat in any Proportion intended in making the Balance at first.

See

See Plate I. Fig. 20.

To the *Beam* A B [23 Inches long, whose *Arm* CB, of 11 Inches in Length, keeps in *Æquilibrio* about the Point C the *Arm* CA, of 12 Inches in Length, by being made so much thicker or having so much more Matter, as may make amends for its being shorter,] hang the Scales D, E, in such a manner, that D, which weighs one Part in twelve less than E, shall hang at the longest End of the Beam, and they will keep each other in *Æquilibrio*; then placing 12 Pounds Weight at G in the Scale E, it will keep in *Æquilibrio* no more than 11 Pounds of F, the Commodity to be sold, or that the *Duty* is to be paid for, if placed in the Scale D: Because then, F will be to G in a reciprocal Proportion of BC to AC.

Now, though such a Balance may be so nicely made as to deceive the Eye, the cheat is immediately discovered, by changing the Weights and the Commodity F from one Scale to another; for then the owner of the Balance must either confess the Fraud, or add to the Commodity he sells, &c. not only what was wanting, but also as much as he intended to cheat him of; and a Fraction of the added Weight proportional to the Inequality of the Arms of the Balance, that is, in this Case, the Buyer, instead of 11 Pounds offered him for 12, his Due, will have (by changing the Scales) $13\frac{1}{11}$ Pounds. For whereas in the first Position of the Balance F (11) \times AC (12) was equal to G (12) \times BC (11) when G or 12 Pounds is placed in the Scale D, then 12×12 will be equal to no less than CB (11) \times $13\frac{1}{11}$ G. Or,

As the Arm CB, 11 Inches long:

Is to the Arm CA, 12 Inches long: :

So will be F, or the Weight 12, placed in the Scale D:

To G $13\frac{1}{11}$, or the Weight of the Commodity keeping the Weight in *Æquilibrio*.

And therefore as this Analogy gives a reciprocal Proportion between the Weights and their Velocities, the *Momenta* will be equal; which, with contrary Directions, destroy one another.

N. B. In all these Cases, we suppose the Weight to hang freely from those Ends of the Balance to which they are fastened.

CHAP. XXXI.

Of Cord-Wood.

Of CORD-WOOD*.

See Plate IV. Fig. 10.

CORD-WOOD is mostly used in such Countries where *Iron Forges* are; I have often observed in *Worcestershire*, in my *Lord Plymouth's Woods*, &c. the Manner of *Cutting* and *Burning the Cord-Wood*, which is thus:

When felled,
&c.

In *October* they begin to fell the *Old Hedge Dwarf-Oak*, and other *Brambles*, which they saw, or cut into *three Feet Lengths*; and if the *Thickness* will bear it, they cleave it in *small Pieces* with a *Wedge*, about *two or three Inches* thick. Then they pile it up in *Ranks*, and let them stand thus till *March* following. Having lain all *Winter* in these *Piles* or *Ranks* to dry, the *Workmen* (or rather *Colliers*, as they call them) take them down, and build them all up again very curiously, laying every *Piece* so close and even, that you cannot see between one *Piece* and another, and the *Ends* are all exceeding even: The *Ends* of the *Ranks* are supported by *Stakes* driven into the *Ground*. They having thus rebuilt all the *Piles* or *Ranks*, they are now ready for the *Measurer*; for this sort of *Wood* is always sold by the *Cord*; the *Dimensions* of which are *eight Feet* long, *four Feet* high, and *four Feet* broad. And this is called a *Statute Cord*, whose *Solidity* is *128 Feet* for a *Divisor*: But different *Counties* have different *Customs*, as we are informed by one † who hath been employed many *Years* in these *Affairs*. He says, that in *Denbighshire*, *Flintshire*, *Cheshire*, and the adjoining *Part* of *Shropshire*, they cut the *Wood* *three Feet* long, and set it up with a *Facing* to be *four Feet* wide or broad, and *four Feet* high, and *eight Feet* long: In the other *Part* of *Shropshire*, some *Part* of *Staffordshire*, *Worcestershire*, and *Monmouthshire*, they cut their *Wood* *three Feet* long, and set it up *three Feet* Wide, *four feet* high, and then they allow the *Buyer* *four Cord* for *three*, or *ten Feet* and *eight Inches* in *Length* for a *Cord*.

The Customs in
different Coun-
ties.

I have seen, (says he) in some *Places*, *Wood* cut *two Feet* long, and set up a *Foot* wide, and *four Feet* high; then *two Cords* (as they call it) or *sixteen Feet* in *Length* is a *Cord*: But here, in *Sussex*, they differ from all the above-mentioned. The *Wood* is

* This Rank of Cord-Wood is not laid down in a due Proportion by a Scale, as most of the Figures in the Book are; because the Room we are confined to will not admit of it.

C F is a Cord, or Rope, tied to two Stakes at each End of the Rank, by which it is supported from falling.

† Mr Davis, Agent to Madam Crowley's Works in *Sussex*,

Ch. XXXIII. Of measuring Cord-Wood.

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is cut three Feet long, and is set up three Feet wide, and three Feet high, and they call fourteen Feet in Length a Cord, which is less by two Feet than the other, it being only 126; for $9 \times 14 = 126$.

And I understand this Sort of Cord is used in most Parts of the South of England, both for Iron Works, and for Firing in private Families.

Example. Admit a Pile or Rank of Cord-Wood be 14 Feet long, 4 Feet high, and 4 Feet broad; how many Cords are therein?

$4 \times 4 = 16$, and $16 \times 14 = 224$ divided by $128 = 1.77$ Cord, for Answer.

By the Sliding Rule.

First, You must find a Gauge Point for this Purpose, which is no more than the Square Root of 128, which is 11.31; but by making use of this first Gauge Point, the Work will fall off the Rule: Therefore the second Gauge Point I find to be 35.7, as is taught in Page 49.

By the Sliding Rule.

Secondly, The Mean between the Length of the Rank AB 14 and the Breadth AD 4, is 7.5: Now say,

D C D C
As 35.7 is to 4, so is 7.5 to 1.77.
G. Pt. Depth Mean Content.

Example 2. Admit a Rank of Cord-Wood AB = CF be 20 Feet long, 4 Feet broad, and AE 5 Feet deep; how many Cords are there in a Rank?

Example 2.

Operation.

The Operation.

First, For the Mean between AB 20, and AD 4;

D C D C
As 20 is to 20, so is 4 to 8.94, the Mean.

Secondly, For the Content by the second Gauge Point:

D C D C
As 35.7 is to 5, so is 8.94 to 3.13.
G. Pt. Depth Mean Content.

C H A P. XXXIV.

To measure MARL-PITS.

Of measuring
Marl-Pits.

See Plate IV. Fig. II.

Marling as
practised in
Lancashire.

IN Lancashire, and the adjacent Counties, this sort of *Measuring* is of great Use; for when their Land has been *grassed* so long, till it begins to bring forth *Rushes, Moss, &c.* then they propose to *marl*, which they generally do in *May* or *June*, that so they may have finished before their *Hay Harvest* in that County begins.

When the Owner of the Land has proposed how many *Acres* he designs to *marl*, he appoints 10 or 12 Labouring Men (called *Marlers*) to come and view the same; which done, they agreed upon a Price, which is about 20s. a *Rod*, or *Perch*, that is, for so many *Rods of Marl* that are contained in the *Pit*. (They have eight Yards in *Length* to the *Rod*, which makes their *Acre*, and their Measures depending thereon, very large.) The *Marlers* having agreed with the Owners for a Price, and Place where the *Pit* must be, they come in the *Winter and Fey*, (as they call it;) that is, mark out the *Shape of the Pit*, and dig off the *Earth* 'till they come to the *Marl*, which much resembles a kind of *fat streaked Clay*; this, in some Lands lieth near the *Surface of the Earth*, and in others a *Foot or two deep*, more or less, according to the Nature and goodness of the Land. The *Carts*, which are made use of in this Work, are (or ought to be) 5 *Feet long*, 2.7 *Feet wide within over the Axle-Tree*, and 2 *Feet deep*; so that a *Cart* of these Dimensions will just hold 27 *solid Feet of Marl*, and is accounted *one Load*, always drawn with *two Horses from the Pit to the Field*: The *Marler's Day's Work* is so many *thousand Load*, according to the *Number of Hands employed*. They begin in the Morning at three o'clock or before, and leave work about three in the Afternoon.

Hours of Work-
ing.

Marl a lasting
Manure.

Lime not so.

They have *two Men* in the *Pit* called *Feyers*, and the rest are *Fillers*; and in the *Field* there is a Man (or two if the Work is large; called a *Setter*, that is, directs the Driver of the *Cart* where to empty his Load, and there the *Setter* spreads the *Marl thin* upon the Ground; and thus it lieth till the *next Spring*, and then they plough it up, and sow it with *Oats*. This Way of manuring the Land is counted the best, because it will endure many Years without any other Repair, But such *Marl* as is in *Lancashire*, is not to be found in every County in *England*; for in *Worcestershire, Warwickshire, &c.* they manure their Land with *Lime*, fetched in Waggons from the *Lime Pits*. This they spread over the Land; but this will not last above *two or three Years*.

When

Ch. XXXIV. Of measuring Marl-Pits.

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When the *Murlers* have finished, they set a Day apart to *Ceremony of* *dress* the Pit, which they do with *Flowers*; and the *Drivers* *dressing the Pit.* and *Horses* are drest with *Possies* or *Nose-gays*, at which Time there is a good *Feast* provided, with a fine *Possy* or *Garland*, drest with *Plates*, *Rings*, *Watches*, &c. (after the Manner of *Milk-maids* on a *May-day* in *London*,) prepared by some of the *Country-maids*, which they bring to the Pit, and present it to the *young Man* that drives the *Master's Team*, he having the Honour all that Day to hold the *Possy* (as they call it) or *Garland*, which is reckoned amongst them a very great Piece of Honour.

Some Time after this, the *Master* and *Workmen* agree to Of measuring make Choice of some able Artift to measure the Pit, which the Pit. is done in the following manner :

See Plate IV. Fig. 11.

First, You are to observe that 8 Yards long, 8 Yards broad, What a Rod of and 1 Yard deep, is a Rod of Marl in *Lancashire* : Therefore Marl. 64 Yards solid, or 1728 Feet, is a *Divisor*, for Rods ; for $8 \times 8 \times 27 = 1728$ Feet.

Thus, having found the *Divisor* for a *Rea* of Marl, where 8 Yards in Length is one Rod, the next thing in order is to shew how to take the Dimensions, which you may do in this manner.

Come to the Pit, draw the Form of it upon Paper, and di- Form of the Pit vide its Surface into *Trapeziums* and *Triangles*; having provid- to be drawn on ed some good *Packthread*, do the like by the Pit itself, and Paper. measure the *Bases* and *Perpendiculars* in Feet and *Decimal Parts*, and in the most convenient Places (as your own Judgment will best direct) of the Pit. Take the *Depths* in the like Measure, and set them down upon your *Paper Draught*, as you see done in the *Figure*. Having taken the *Dimensions* as above directed, we shall next proceed to cast up the *Content* thereof,

	Depths.
CE=42.5	16.8
$\frac{1}{2}$ DI= 2	15.8
The Area=85.0	The Sum 32.6
	The Half 16.3
	The Area 85
	815
	1304

The Content of CDEI = 1385.5

P 3

AC

	<i>Depth.</i>
AC = 51.5	15.8
$\frac{1}{2}$ BK = 2.6	5.0
	2.1
3090	
1030	3) 22.9 (7.6
The Area 133.90	
The Depth 7.6	
8034	
9373	

The Content of ABCK = 1017.64 Feet.

	<i>Depths.</i>
AE = 70	16.8
CH = 30.5	15.8
GF = 35.5	14.7
The Sum 66.0	11.3
	10.6
Half the Sum 33.0	9.4
AE = 70	8.7
	3.4
The Area 2310.	2.1
The Depth 10.3	
6930	9) 92.8 (10.3 Equated
2310	Depth.

The Content ACEF = 23793.0
 CDEI = 1385.5 } Feet.
 ABCK = 1017.64

1728) 26196.14 (15.17 Rods.
 64
 68 Ans. 15 10.88
 102
 10.88

A Note.

Note, The two *Depths* next to the *Face* of the *Pit*, are not taken in *Whole*, but in their *Halves*, to answer the *Shallowness* of that *Part* of the *Pit*.

By the *Sliding Rule*.

By the *Sliding Rule*. The *Divisor* for reducing of *Feet* into *Rods* is 1728, its *Square Root* is 41.6, the *Gauge-Point* on the *Sliding Rule*.
 1. For

1. For the Triangle CDEI.

The Mean between CE 42.5, and half DI 2, is 9.22; see Page 43; and the mean Depth is 16.3.

D	C	D	C
As 41.6 is to 16.3,	so is 9.22 to .80 Rod or Perches.		
G. Pt.	Depth	Mean	Content.

2. For the Content of the Triangle ABCK.

The Mean between AC 51.5, and half BK 2.6 = 11.57, and the mean Depth 7.6 Feet.

D	C	D	C
As 41.6 is to 7.6,	so is 11.57 to .56 Rods or Perches.		
G. Pt.	Depth	Mean	Content.

3. For the Trapezium ACEF.

The Half of the two Perpendiculars is 33, and the equated Depth 10.3 Feet; and the Mean between the Base AE 70, and half Sum of the Perpendiculars 33, is 48.06.

D	C	D	C
As 41.6 is to 10.3,	so is 48.06 to 13.7 Rods or Perches.		
G. Pt.	Depth	Mean	Content.

$$\begin{array}{rcl} \text{ACEF} & = & 13.7 \\ \text{ABCK} & = & .59 \\ \text{CDEI} & = & .80 \end{array} \left. \vphantom{\begin{array}{rcl} \text{ACEF} \\ \text{ABCK} \\ \text{CDEI} \end{array}} \right\} \text{add.}$$

The whole Content of the Pit = 15.09 Rods, as above.

Note, In the second Work, where the *Diagonals* are taken in A Note. Rods, and the Depth in Yards, if you find the Area of each Triangle, &c. (according to the Rules of measuring Superficies) and those Areas multiplied by the Depths on the Lines A and B on the Sliding Rule, you will have the Content in Rods as above; which being so plain, needs no Example.

If we reduce the Bases and Perpendiculars into Rods (or Perches) of eight Yards to the Rod, and the Depths into Yards and Decimal Parts, they will stand thus.

Depths

Depths.		Diagonals.	
Feet.	Yards.	Feet.	Rods.
15.8	5.27	CE = 42.5	1.77
16.8	5.6	DI = 4.	.166
11.4	3.76	AC = 31.5	2.146
14.7	4.89	BK = 5.2	.219
10.6	3.53	AE = 70.	2.92
8.7	2.89	CH = 30.5	1.27
9.4	3.169	GF = 35.5	1.46
5.0	1.66		
2.1	0.69		
3.4	1.166		

They are reduced thus, viz. 16 Feet are $5\frac{1}{3}$ Yards, and .8 of a Foot, is $\frac{8}{10}$ of $\frac{1}{3}$ of a Yard, which two Fractions, viz. $\frac{1}{3}$ and $\frac{8}{10}$ of $\frac{1}{3}$ will be $\frac{54}{100}$, its Decimal = .6 of a Yard. Then 42.5 Feet is $1\frac{3}{4}$ Rod, and .5 of a Foot is $\frac{5}{10}$ of $\frac{1}{3}$ of $\frac{1}{8}$ of a Rod, = $\frac{5}{140}$ and $\frac{3}{4} = \frac{740}{1000}$, its Decimal is .7708 of a Rod, and after this manner I have reduced the other Feet in the Table. Now if the Superficial Content of each Triangle be found in Rods, and that multiplied by the Depth in Yards, it will give the Content of the Pit as before, and the Fractional Part of a Rod multiplied by 64, gives its Value in Yards.

Chains, of what Length.

A Decimal Yard.

For this Purpose it will do well for the Practitioner to have a Chain eight Yards long, Decimally divided; but if he measures where $5\frac{1}{3}$ Yards make a Rod or Perch, then let his Chain be that Length; also he must have a Yard decimally divided to take the several Depths, as has been above directed.

C H A P. XXXV.

Shewing how to find the exact Distance to any Object that's visible, without an Instrument, or actually measuring of the Distance that is required.

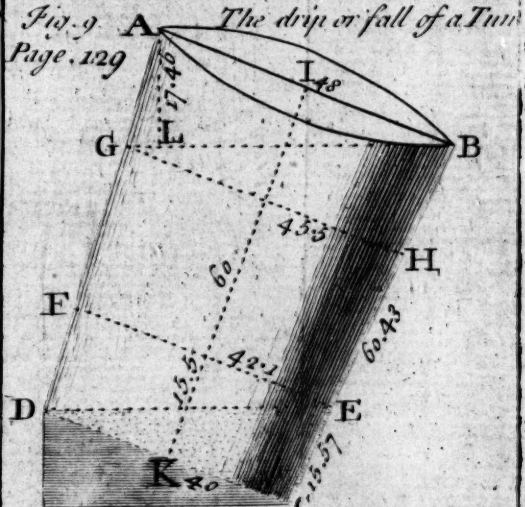
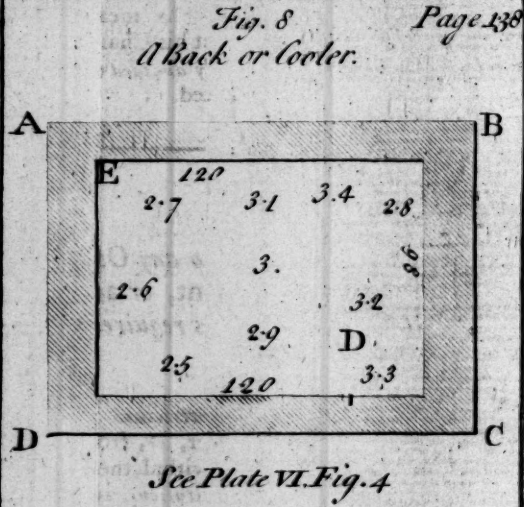
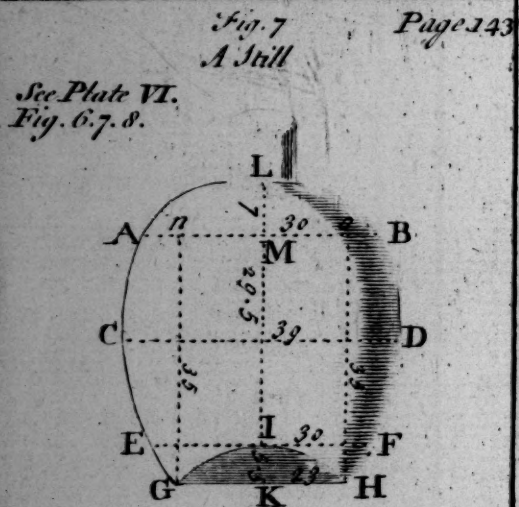
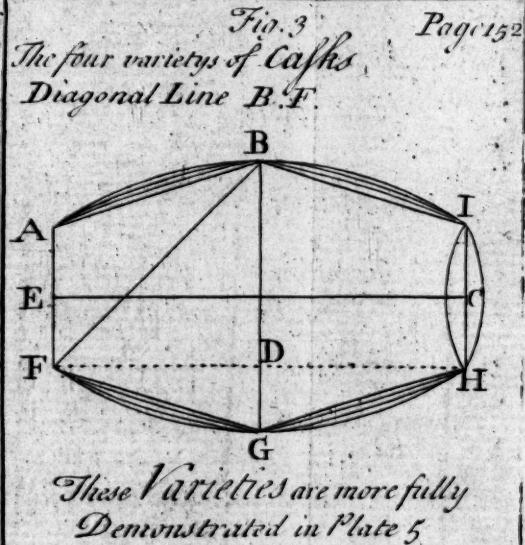
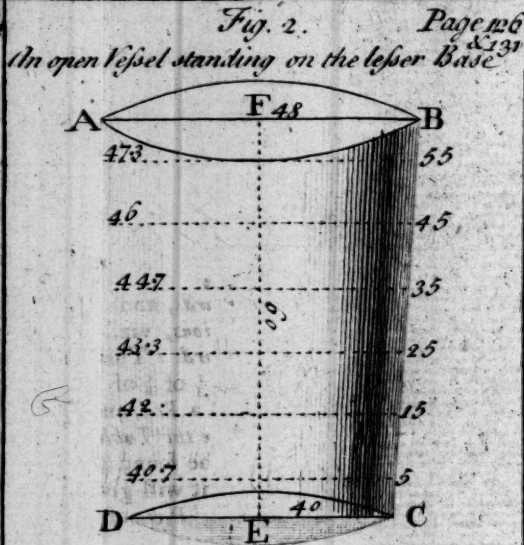
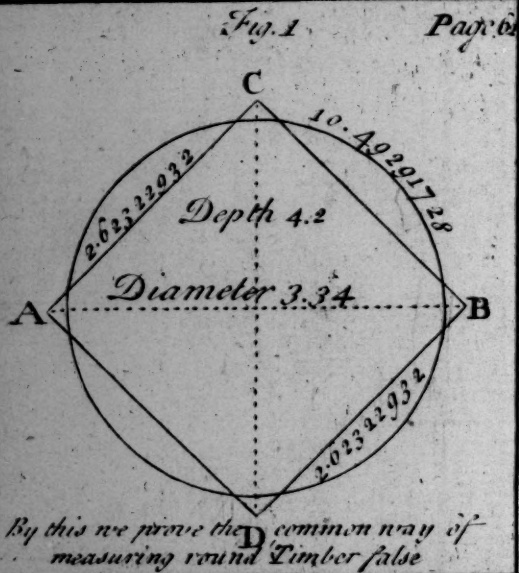
See Plate IV. Fig. 12.

Several Methods of taking Distances.

THERE are several Ways known to Geometricians to take the Distance of Places one from another, or, from your Station to any Place seen at a Distance; but withal, there must be an Instrument used to take Angles, at two Stations, and oftentimes Trigonometry is called in to their Assistance; my Bu-

iness

Plate. 4.



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Plate 4.

Fig 4 Page 179
A lask part full by Bing on one Side

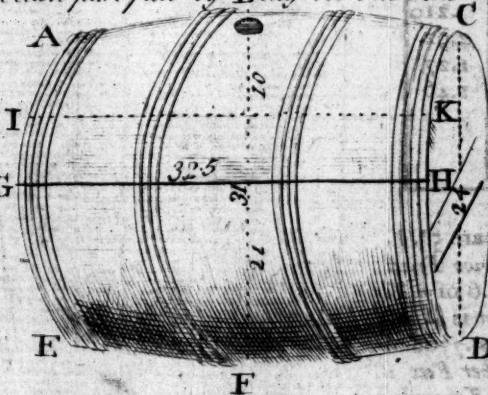


Fig 5 Page 181
A lask part full standing on one end

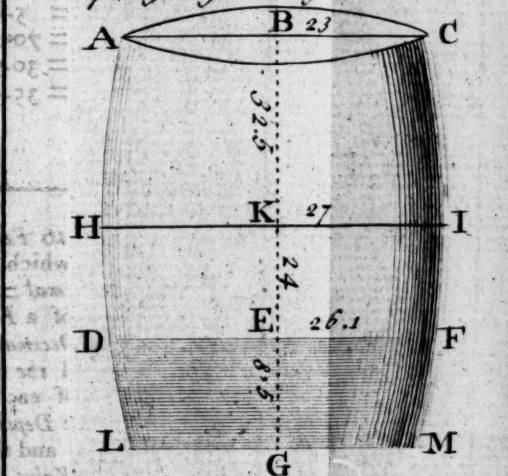


Fig 6 Page 140
A Copper with a rising Crown

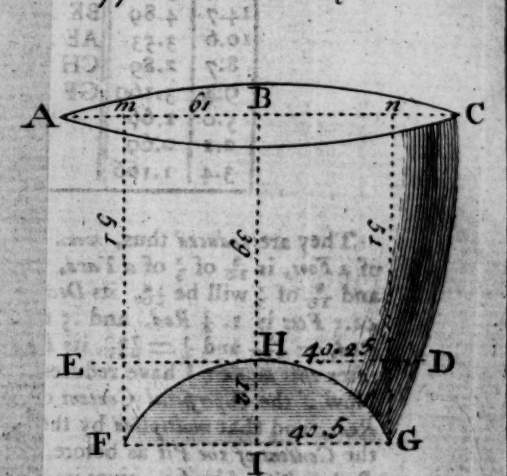


Fig 10 Page 210
A Cord of Wood

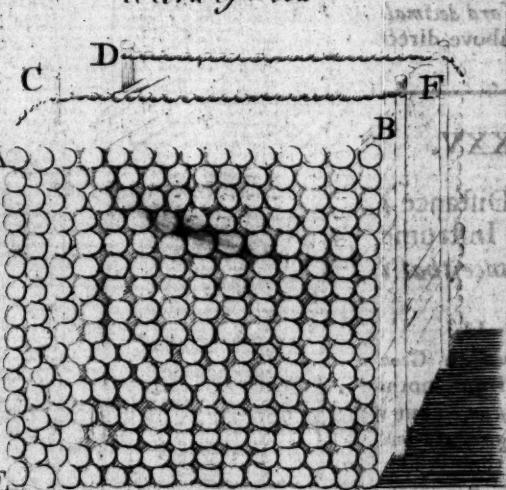


Fig 11 Page 212
A Marl-Pitt.

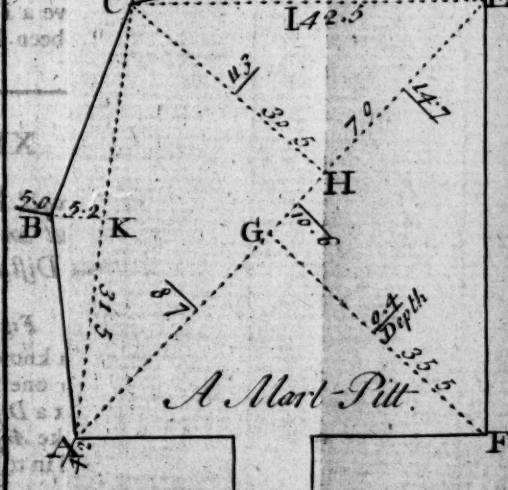
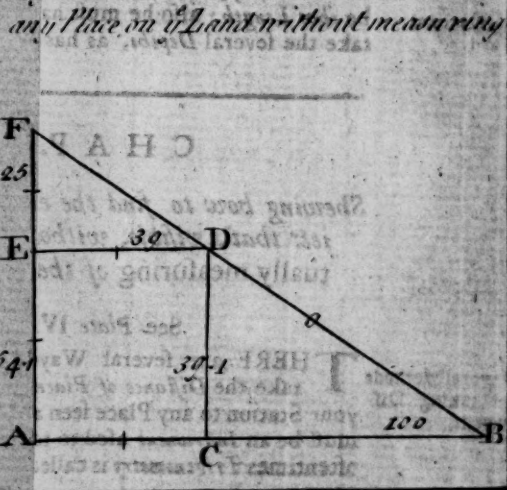
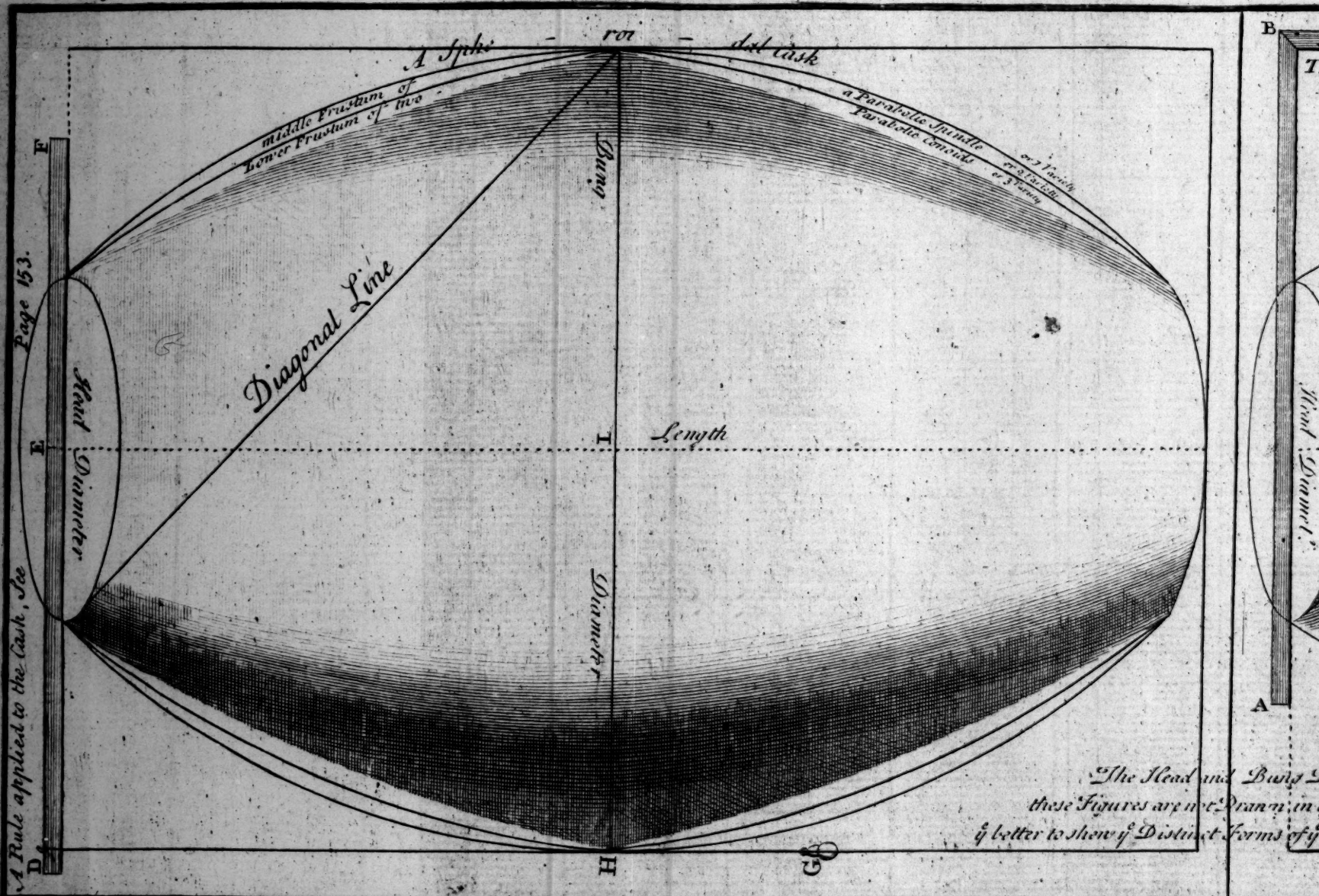


Fig 12 Page 216
By this we can tell the distance to any Place on Land without measuring



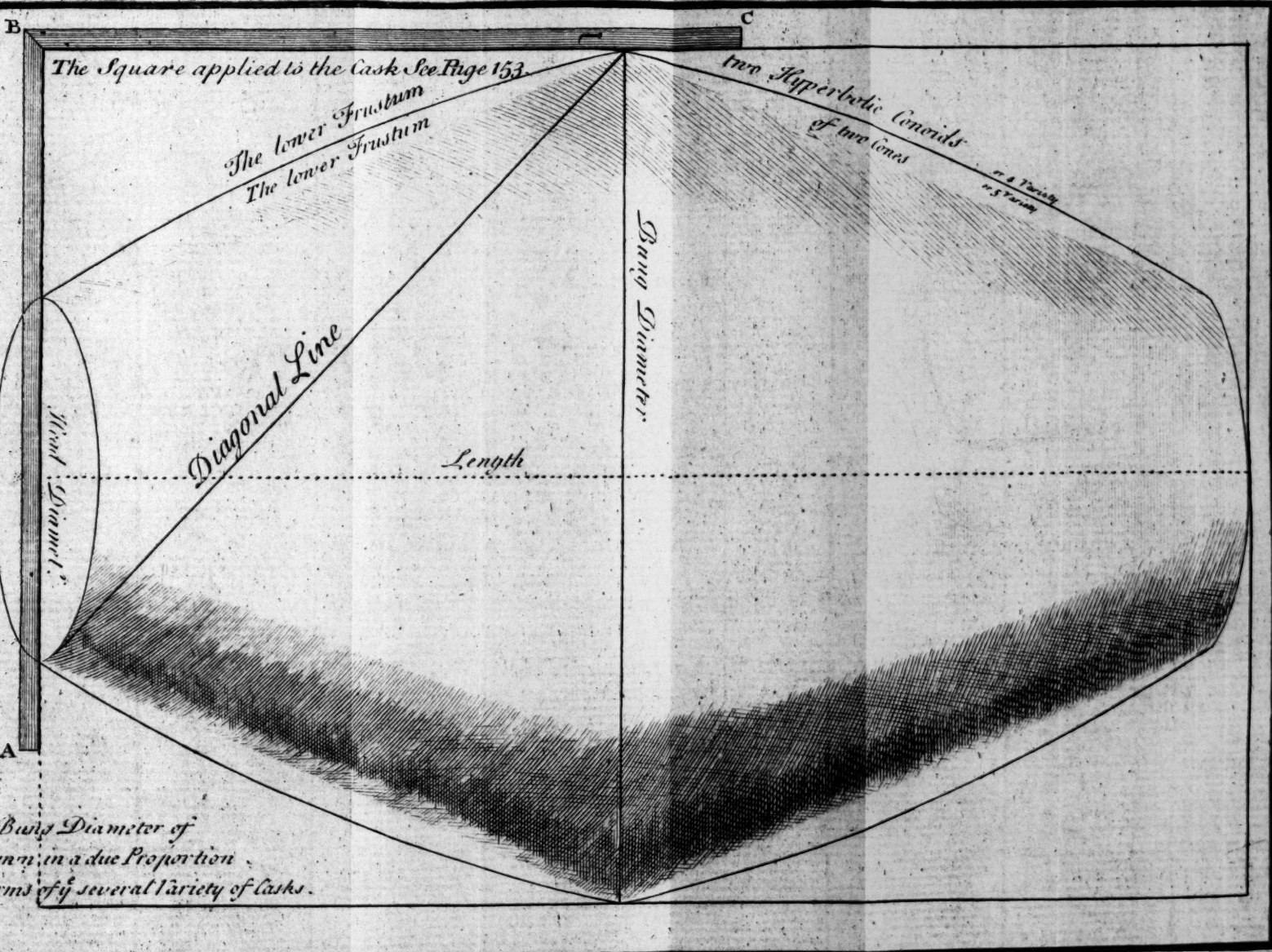


A Rule applied to the Cask, See

Page 153.

to fold out facing page [167] part 1.

The Head and Bunt of these Figures are not drawn in a better to show of Distinct Forms of



Of taking Distances

XXV.

It shall be here to show how to perform the same manner.

EXAMPLE

Let four straight Sides (if matters not whether they be all of a length or not) and then let it be required to measure the distance AB upon some plain level ground. At A stretch a line AC to the right, there stand, and order an Assistant to hold another down at C; to that standing at A you may go to the Staff C, and the Staff at B, take in a good Sight how it matters not, and Distant as Staff C is from the Staff A, then take a third Staff, and so on, till the Line CD may be at right Angles with AB and then draw down the Staff EAB, Take in your Sight the Staff A (always being as before) to the Staff D and the Staff B in a right Line, which I find it not to be at E, here make a Mark, and measure the distance BE as Feet 63 and 5/8; then BE is equal to AC, you may make FA distant, by measure CD you may find it to be 75. Now if you take the Perpendicular drawn upon the Line AB, for the Triangle BEB is equal to the Triangle FAC. Therefore it will always hold.

It is to be noted that the Line AB is not the same as the Line AC.

Operation

It is to be noted that the Line AB is not the same as the Line AC.

It is to be noted that the Line AB is not the same as the Line AC.

the END of the First Part

Ch. XXXV. Of taking Distances.

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finels shall be here to shew how to perform the same *without an Instrument.*

EXAMPLE.

Get four straight Sticks (it matters not whether they be all *Example.* of a Length or not) and then let it be required to measure the Distance AB, upon some *plane level Ground*: At A thrust down *one of the Sticks*; there stand, and order an *Assistant* to thrust another down at C; so that, standing at A, you may see the *Staff C*, and the *Mark* at B, *both in a right Line*; (now it matters not at *what Distance the Staff A* is from the *Staff C*; but, if your *Distance required be large*, then the *farther C* is from A, the *better* :) then take a *third Staff*, and go from C any *Number of Feet, Yards, or any other Measure*, to D, so that the *Line CD* may be at *right Angles* with AB, and at D thrust down the *third Staff*. Lastly, Take the *other Staff*, and go from A (*Square-wise, as before*) so far, till you can see the *Staff D* and the *Mark B* in a *right Line*, which I suppose here to be at F; here make a *Mark*, and measure the Distance FE 25 Feet, &c. and EA 39.1; then FE 25 added to EA 39.1, make FA 64.1 Feet; by measuring CD equal to AE, I find it to be 39.1. Now the *Truth* of this Performance is grounded upon *similar Triangles*, for the *Triangle FED* is *similar* to the *Triangle FAB*. Therefore it will always hold,

As FE 25 is to ED 39, so is FA 64.1 to AB 100 *ferè*.

Operation.

As 25 is to 39, so is 64.1

$$\begin{array}{r} 39 \\ \hline 5769 \\ 1923 \\ \hline \end{array}$$

25) 24999 (100 *ferè*.

Note, It matters not whether ACDE be *equilateral*, or *oblong*, provided the opposite Sides are *parallel*.

The END of the FIRST PART.

Having formerly observed several of my Brother Officers to have been unacquainted with what follows relating to Vintners, &c. selling Wine by the Bottle; I have here inserted it for the Information of the young Officer.

ABOUT *eighty* Years since, the Abuse the Public sustained by the Sale of Wine in Bottles was so great, that the Legislature found it necessary to ordain, That, after the *Tenth Day of September*, One 1689. thousand, Six hundred Eighty-nine, no Vintner, or Retailer of Wines whatsoever, should sell or utter any Wines by Retail, other than by, and in Measures made of Pewter, and sealed according to the Statute, under the Pain and Penalty of *five Pounds*, for every such Offence, to the Informer, to be recovered by Action of Debt, Bill, Plaint, or Information, in any of the King's Courts of Record, wherein no Protection or Wager of Law, or any more than one Imparllance should be allowed. BUT, this Ordinance having put it into the Power of any one Person to convict the Offender, many vile People commenced Informers for the Sake of the Reward: And, on the other Hand, many Vintners evaded the Penalty, by pretending that what they sold was some other Liquor, and not Wine; to prevent which Abuses, the Legislature, the very next 1690. Year, ordained, That, if any Person, at any Time after the *First Day of February*, One thousand, Six hundred and Ninety, should sell or utter by Retail in, or by any Glass Bottle or Bottles, or in or by any other Retail Measure, not made of Pewter and sealed according to Law, any Kind of Wine or Wines whatsoever, or any other Liquor exposed to Sale for Wine; should be convicted thereof by the Confession of the Party, or by the Oath of *two credible* Witnesses, before one or more Justices of the Peace of the County, City, or Place, where such Offence should be committed; and such Person being prosecuted for such Offence, within *thirty Days* next after such Offence committed, that then every Person, so offending, for every such Offence, the Sum of *Fifty Shillings*, which, if not paid on Demand, should be levied by Distress and Sale of the Offenders Goods, by Warrant under the Hand and Seal of the Justice or Justices, before whom such Conviction should be made; which Warrant the said Justice or Justices are impowered and required to grant to the Constable, Headborough, or Tything-man of the Parish or Place where such Offence should be committed, who are required immediately to levy the same, rendering the Overplus to the Owner thereof; and the Monies so levied to be paid to the Informer; and for Want of sufficient Distress, the Offender is to be committed to the common Goal, there to remain without Bail or Mainprize, until he pays the said Penalty, and all the necessary Costs and Charges of such Conviction and Prosecution; the said Costs to be taxed by the Justice or Justices before whom the said Conviction was made. BUT it was provided, that, where any Offender should be punished by Virtue of this Ordinance, he should not be prosecuted, nor incur the Penalty of any other Ordinance for the same Offence; and that no Certiorari should be granted or allowed to supersede, or remove any Conviction or Proceedings, in pursuance of this Ordinance; but that Execution and all other Proceedings should be had and made thereupon; any such Writ or Writs of Certiorari, or Allowance thereof, notwithstanding.

T H E

THE ROYAL GAUGER.

PART II.

THE

THE

ROYAL CAVALRY

5

PART II

THE

THE Royal Gauger.

PART II.

CHAP. I.

Shewing what is to be observed and done by those who would qualify themselves for the Employment of an Officer in the Excise; together with the Forms of those Oaths, Certificates, &c. which are necessary for that Purpose.

THE Method of obtaining Employment in the Excise is, by petitioning the Commissioners for an Order to be instructed; and in order to that, the Person who would petition must procure from the Minister of the Parish where he was born a Certificate of his Age, which must not be less than 21*, * See the *Super-visor and Collec-tor's Duty on p. 222.* nor more than 30; and if married, he must have no more than two Children.

A Certificate of the Petitioner's Age.

THESE are humbly to certify the Honourable Commissioners of Excise, and whom it may concern, that C. L. of F. in the County of L. was baptiz'd the 8th Day of 17-- and so is near Years old, as I find it in the Register of the Church and Parish of aforesaid. In Testimony thereof, I have hereunto set my Hand the Day of 17--
E. F. { Minister of the Parish and
Parish Church aforesaid.

Then the Petitioner must get a Certificate and Recommendation signed by as many of the neighbouring Gentlemen as he can, the more considerable and well affected to the Government the Gentlemen are, the more his Petition will be regarded.

A Certificate and Recommendation to be sign'd by some of the principal Gentlemen in the Neighbourhood in the Country.

To the Honourable Commissioners of Excise.

THESE are humbly to certify your Honours, and whom it may concern, that C. L. of F. in the County of L. is a Person well known to us to be near the Age of 25 Years, of a so-
PART II. * P
A Certificate and Recommendation of some of the principal Gentlemen in the Country.

Of obtaining Employment. Part II.

*ber Life and Conversation, and well-affected to the present Govern-
ment ; and, in our Opinion, very fit to serve his Majesty in the Re-
venue of Excise : Therefore, we humbly recommend him to your Ho-
nours for an Order to be instructed for a Gauger. And in Testi-
mony hereof we have hereunto set our Hands this* Day
of 17-- A. B. F. J. J. R.
C. D. G. H. L. M.

But whether the Petitioner lives in *London* or the *Country*,
he must *write*, and take the following Oath, *viz.* that he has
not made any indirect Application to be instructed.

The Oath, that the Petitioner has not indirectly en-
deavoured to obtain an Order to be instructed.

N. B. *This Oath must be taken before, and signed by a
Justice of Peace.*

The Oath, that **I** C. L. do voluntarily make Oath, that neither I, nor any Per-
son for me, have, to my Knowledge, directly or indirectly given,
has not indirectly endeavoured to get an Order for Instruction. *or promised to give any Fee, Gratuity, or Reward, to any Person or
Persons whatsoever, for the obtaining, or endeavouring to obtain
for me, any Order of Instructions for my Introduction into the Re-
venue of Excise, or Employment therein. Dated the* Day
of 17-- C. L.

It is very proper to get likewise a Certificate from the Col-
lector or Supervisor, or *this* alone may do, but both are best.

The Supervisor's Attestation of the Petitioner's Abilities. **The Form of a Certificate to be signed by the Col-
lector or Supervisor.**

To the Honourable Commissioners of Excise.

May it please your Honours.

MR. C. L. of F. in the County of L. by whom this Certificate
is written, is well-skill'd in Vulgar and Decimal Arith-
metick, is of the Age of 25 Years, is a Man of sober Life and Con-
versation, is ingenious, and has a fair Character for Integrity, is
of a healthful Constitution of Body, and likely to make a good Offi-
cer ; he is a single Man, and is well affected to the present Govern-
ment, and of the Communion of the Church of England, as by Law
establish'd : And this is humbly attested by,

Honoured Sirs,

Your Honours most faithful,

And Obedient Servant,

E. F.

{

Collector,
or
Supervisor.

But

But if the Petitioner lives in *London*, and has Gentlemen of *If the Petitioner* Figure and Credit that will wait on the Commissioners with *lives in London.* him at the Excise-Office, a Petition to the following Effect may be sufficient.

The Form of the Petition.

To the Honourable Commissioners of Excise.

The humble Petition of *A. B. of C. in the County of D. by* whom this is written.

Sheweth,

THAT your Petitioner is well skill'd in *Vulgar and Decimal* Form of a Peti-
Arithmetick; and he is of the Age of 27 Years, as appears *Person, who lives*
by a Certificate under the Hand of the Rev. Mr. E. F. of G. and *in London, is per-*
is a single Man, of a sober Life and Conversation, is ingenious, and *sonally recom-*
has a fair Character for Integrity, is of a healthful Constitution of *mended by some*
Body, and well affected to the present Government. *of the Commis-*
sioners at the

Excise-Office.

Therefore he humbly desires your Honours will please to grant him an Order to be instructed for a Gauger within the City of London, or Liberties thereof, or elsewhere. And, as in Duty bound, your Honours Petitioner shall ever pray, &c.

§ The foregoing Certificates, &c. must be wrote upon distinct Sheets of Paper, and sent to the Commissioners at the Excise-Office in the *Old Jewry, London, Carriage paid.*

N. B. That Orders for instructing Pupils are issued out at the Excise-Office only six Months in the Year, viz. from *Michaelmas* to *Lady-day*, that being the *Making Season*: So that it will be in vain for any Petitioner to expect an Order the other Part of the Year.

What farther relates to this Matter, will be sufficiently, and I think best explained by setting down the Duty of the *Collectors* and *Supervisors*, as to giving Certificates, which is as follows:

IT is the *Supervisor's* Duty (to which in such Cases the *The Supervisor* *Collector* must conform) when any Person applies for a *and Collector's* Certificate, in order to his being instructed, not to give him *Duty, when ap-*
one before he has an Order so to do, either from the Board, *plied to for a Cer-*
or from some one of the Commissioners: nor must he give *tificate for any*
him such Certificate before he has satisfied himself that the *one's having an*
Person applying is above *Twenty-one*, and under *Thirty* Years of *Order for being*
Age: and for his Satisfaction in this Point, he must examine *instructed.*
the Register *himself*, if the Person was born in his District; but if he was born in another District, he must get a Certificate from that Supervisor who is to examine the Register. And he must likewise satisfy himself, that he is a likely Man to make a good Officer, and that he writes a good Hand, and under-

Of obtaining Employment, &c. Part II.

stands the four first Rules of *Vulgar* and *Decimal* Arithmetick, that he is ingenious, healthy and active, and that he is of a sober Life and Conversation, of the Communion of the *Church of England*, well affected to the Government, and that he is not incumbered with Debts, nor a larger Family than a Wife and *two* Children; and if the Supervisor finds him in every respect thus qualified, he must certify the same *gratis*. And this Certificate is to be wrote by the Person himself, and in it he is to express the *Trade* or *Business* he has been bred up to (if any,) the Place of his Abode, whether he be married or single; and if he be married, how many Children he has, together with the Names, Places of Abode, and Additions of *two* Persons to be bound with him, sufficient to answer *Two Hundred Pounds* for the due Execution of his Office; and he must likewise mention who he desires to be instructed by; and besides this, he must make *Oath* before one of his Majesty's Justices of the Peace, that no Fee, Gratuity, or Reward is, according to the best of his Knowledge or Belief, given, or promised to be given, to any Person whatsoever, for his obtaining an Order of Instructions, or an Employment in the Revenue of Excise. See the *Oath* on Page 220. And this Oath must be writ by himself under the Certificate above-mentioned, and signed by the Justice of the Peace who administered the same to him.

The Petitioner, having obtained an Order for his Instruction, is put under the Care of an Officer, approved of by the Supervisor, for that Purpose: And when he is fully instructed, he must be examined by the Supervisor, whose Duty is as follows.

The Supervisors
Duty as to those
who desire of
him a Certificate
that they are
fully instructed.

THE SUPERVISOR, before he certifies that any Person is fully instructed for the Employment of a Gauger, must be well satisfied, that he can cast up both Excise and Malt Gauges, by the Sliding Rule; and that such Person has gauged and stocked for a Month in the Division in which he was instructed, and entered the same in a Book to be by him made for that Purpose; and that he has made a true Voucher and Abstract therefrom; and that he is in all respects well qualified for a Gauger's Employment: And the Supervisor must take only 20 Shillings for such Examination and Certificate; and the Books, Vouchers and Abstracts, being signed by the Person, Officer, and the Supervisor himself, the Supervisor must send to the Board, at the Charge of the Person so certified for, or to bear the same himself.

A Certificate from the Supervisor, that the Petitioner is compleatly qualified for a Gauger: Which must also be signed by the Officer by whom he was instructed.

Liverpool 1st Division, Feb. 14, 17--

THIS is humbly to satisfy the Honourable Commissioners of Excise, that I A. B. have examined C. L. in the Excise, Malt, and Distillery, and find him compleatly qualified for a Gauger; he has also proper Instruments for taking and casting up Gauges, and in our Opinion is likely to make a good Officer. As Witness our Hands, the Day and Year above written.

Supervisor's Certificate.

I. B. Supervisor.
C. L. Officer.

And after all these Steps have been taken, yet, if the Petitioner cannot obtain the Countenance of some Gentleman, (a Member of Parliament is best) that is personally acquainted with one of the Commissioners, frequently to solicit and remind the Commissioner of his Promise, his Petition will certainly come to nothing; for notwithstanding there are several Vacancies, either by Deaths, Discharges, &c. happening every week, yet there are so many constantly applying, that those Petitioners who have the best Solicitors always succeed soonest.

A necessary Piece of Advice.

The Form of a Gauger's Commission.

TO all to whom these Presents shall come, greeting, know ye, that we whose Hands and Seals are hereunto set, being the major Part of the chief Commissioners and Governors for the Management of the Receipt of the Excise; that is to say, the Duties upon making and importing Beer, Ale, and other exciseable Liquors in England, Wales, and Berwick upon Tweed, and upon making Malt, and upon making and importing Mum, Cyder and Perry respectively, within the before-mentioned Limits, and of the Duties upon making Candles, and of the Duties upon Hops growing and to grow in England, Wales, and Berwick upon Tweed; and we also being the major Part of the Commissioners for the Receipt and Management of the several and respective Duties herein after mentioned, within the Limits aforesaid; (that is to say) of the several and respective Duties upon making of Soap, Paper, Pasteboard, Milboard, and Scaleboard respectively; and upon Printing, Painting, or Staining of Paper, and upon Printing, Painting, Staining, or Dying of Silks, Callicoes, Linens, and Stuffs respectively; and upon making of Starch, and of Gilt and Silver Wire respectively; and upon Tanning, Tawing, or Dressing of Hides and Skins, and Pieces of Hides and Skins, and upon making of Vellum and Parchment respectively; and of the Inland Duties upon Coffee, Tea, and Chocolate respectively, and of the Duties upon all the Materials, or Metal, or other Preparations

The Form of an Excise Officer's Commission.

By a Majority of the Commissioners.

Ale and Beer, &c.
Malt.
Mum, &c. imported.
Candles.
Hops.

Soap, Paper, &c.
Paper stain'd, &c.
Silks, Callicoes, &c.
Parchment.
Coffee, Tea, &c.

Glass, Coaches,
&c.

Reasons for ap-
pointing the
Officer.

Appointment of
the Officer.

Malt exported.
Coffee, Tea, &c.
unlawfully im-
ported.
Impower'd to
gauge, measure,
weigh, &c.

And must enter
true Accompts
in his Books.

And from Time
to Time deliver
to the Commis-
sioners.
Or the major
Part of them in
Writing.

Of the Quantity,
Quality, &c.
Of the Goods li-
able to the Du-
ties.

made use of in the making of Glass, and upon every Coach, Berlin, Landau, Chariot, Calash, Chaise, Marine Chaise, Chair, and Caravan, or by what Name soever such Wheel-carriages now are, or hereafter may be called or known, that shall be kept by or for any Person for his or her own Use, or to be let out to hire respectively, and of the Duties payable by all Persons and Bodies Politick or Corporate, owning, using, having, or keeping certain Quantities of Silver Plate arisen or accrued, or to rise or accrue in England, Wales, and Town of Berwick upon Tweed, reposing especial Trust and Confidence in the Knowledge, Skill, Industry, Integrity, Fidelity, and Circumspection of A. B. Gentleman, have (pursuant to the several and respective Powers, given and granted in and by the several and respective Statutes relating to the said several and respective Duties, and in and by our several and respective Commissions and Constitutions) nominated, constituted, and appointed, and for his Majesty's Service, do nominate, constitute, and appoint, him the said A. B. to be one of the Surveyors, Messengers, Gaugers, and Officers of and for the said several and respective Duties before-mentioned, all and every of them respectively, and of all other Duties, that shall or may be put under the Management of us the said present Commissioners, or of the like Commissioners for the Time being, and for the measuring and attending Malt that shall be shipped for Exportation, and for the seizing of all Coffee, Tea, Chocolate, and Cocoa-Nuts, as shall be unlawfully imported, or carried within the Limits aforesaid: And do hereby empower and require him the said A. B. that pursuant to the Powers and Authorities, in and by the said several and respective Statutes relating to the said several and respective Duties, he shall, and do, from Time to Time, by gauging, measuring, weighing, and otherwise take, and also do enter into a Book and Books, to be from Time to Time delivered to him for that Purpose, full and true Accounts of the Quantities, Qualities, Natures, and Kinds of all and every the several and respective Goods, Commodities, and Manufactures respectively chargeable with, and liable to, the said several and respective Duties, which he from Time to Time, shall, or may find out or discover, and thereof respectively shall and do, from Time to Time, make and deliver to us, the present Commissioners, and to the Commissioners for the said Duties for the Time being, or the major Part of us, or them respectively, or to such as we, or the major Part of us have appointed, or as we, or the Commissioners for the said Duties for the Time being, or the major Part of us or them respectively, shall nominate or appoint for such Purpose, full and true Returns, Reports, Vouchers, and Accounts in Writing, of the full and true Quantities, Qualities, Natures, and Kinds, of all and every the said several and respective Goods, Commodities, and Manufactures before-mentioned, chargeable with, or liable to, the said several and respective Duties, by him from Time to Time found out or discovered: And that he shall and do exercise, execute, and perform, all and every the Powers and Authorities, in and by the several and respective Statutes given and granted, or enacted to be done, exercised, ex-

ecuted,

executed, and performed by such Surveyor, Messenger, Gauger, or Officer, according to the true Intent and Meaning of such Statutes respectively. To hold, exercise, execute, and perform, the said Office of such Surveyor or Messenger, Gauger and Officer, as aforesaid, during the Pleasure of us the said present Commissioners, and during the like Pleasure of the Commissioners for the said Duties for the Time being, or of the major Part of us respectively. And all Justices of the Peace, Mayors, Sheriffs, Bailiffs, and other Magistrates, and also all Constables, Headboroughs, and other Officers of the Peace, and other Person or Persons whatsoever, are hereby prayed and required to be aiding and assisting unto him the said A. B. in the due Execution hereof, as they will answer the Contrary at their utmost Peril. Given under our Hands and Seals, at the chief Office of Excise, and for the said Duties, in London, this _____ Day of _____ in the

To hold his Office during Pleasure.

Justices, &c. required to assist the Officer in Execution of his Office.

Year of the Reign of our Sovereign Lord GEORGE, by the Grace of God of Great-Britain, France, and Ireland, King, Defender of the Faith, &c. Annoque Domini, 17--

N. B. The Commission is always signed and sealed by (five) a Majority of the Commissioners.

WHEN the Officer is instructed, &c. before he intermeddles in his Office, he must be careful to take the Oaths of Allegiance and Supremacy, and the Oath of Office, before one of the Barons of the Exchequer, or two Justices of Peace * in that particular County where he is employed, taking a Certificate thereof, which he must send to the Auditors of Excise at the Excise-Office in London, that it may be entered there as the Law directs.

The Oaths of Allegiance and Supremacy.

I A. B. do sincerely promise and swear, that I will be faithful and bear true Allegiance to his Majesty King George; So help me God. The Oath of Allegiance.

I A. B. do swear, that I do, from my Heart, Abhor, Detest, and Abjure, as impious and heretical, that Damnable Doctrine and Position, that Princes excommunicated or deprived by the Pope, or any Authority of the See of Rome, may be deposed or murdered by their Subjects, or any other whatsoever. And I do declare, that no foreign Prince, Person, Prelate, State or Potentate hath, or ought to have, any Jurisdiction, Power, Superiority, Prebeminence or Authority, Ecclesiastical or Spiritual, within this Realm: So help me God. The Oath of Supremacy.

* There is this Difference betwixt taking these Oaths before a Baron or two Justices: Those who have taken them before the Justices, if they are removed into another County, must take them *de novo*; whereas, the Baron's Certificate is sufficient for any Part of the Kingdom; but then, for this the Officer usually pays 5s. and but 1s. for that signed by the Justices.

The Oath of Office.

The Oath of Office.

YOU shall swear to execute the Office of Surveyor, Messenger, and Gauger for his Majesty's Duties arising by Excise, truly and faithfully, without Favour or Affection, and shall from Time to Time, true Account make, and deliver to such Person or Persons as his Majesty shall appoint to receive the same; and shall take no Fee or Reward, for the Execution of the said Office, from any other Person than from his Majesty, or those whom his Majesty shall appoint in that Behalf;

So help you God.

A Certificate by a Baron of the Exchequer, that the Officer has taken the Oaths of Allegiance and Supremacy, and the Oath of Office.

Sir Thomas Bury's Certificate of the Author's having taken the Oaths of Allegiance and Supremacy, and the Oath of Office.

THIS is to certify, That Charles Leadbetter, of London, Gent. came this Day before me, Sir Thomas Bury, Knt. one of the Barons of his Majesty's Court of Exchequer, and took the Oath for the due and faithful Execution of the Office of Surveyor, Messenger, and Gauger for his Majesty's Duties arising by Excise, together with the two several Oaths, appointed by an Act of Parliament, made in the first Year of the Reign of their late Majesties King William and Queen Mary, entitled, An Act for abrogating the Oaths of Allegiance and Supremacy, and appointing other Oaths. Witness my Hand, the Twenty-seventh Day of March, in the Year 17--

Thomas Bury.

The Auditor of the Excise his Certificate, that he has register'd the Author's taking the said Oaths.

XXXmo. Dei Apr. 17--
Intrat in Office Auditor.
per le Excise per

F. Stedman.

And at the next Term, or at the next General Quarter Sessions, after he is admitted into Employment, he must take the Test and Abjuration Oaths, as prescribed by the several Acts of Parliament, having first received the Sacrament, upon a Sunday in some Parish Church in the Presence of two Witnesses; and must take a Certificate thereof, signed by the Minister and Church-Wardens, in the Presence of the said two Witnesses, who are also to appear in Court, where he takes the Oaths, to prove that he received the Sacrament, and that the Minister and Church-Wardens signed the Certificate.

A Cer-

A Certificate that the Officer has received the Sacrament according to the Usage of the Church of England.

WE the Minister and Church-Wardens of the Parish and A Certificate of
 Parish Church of Prescott, in the County of Lancaster, having received
 do hereby certify, that Charles Leadbetter, of Farnworth, the Sacrament,
 in the County aforesaid, on Sunday the Twenty-fourth Day of April,
 did receive the Sacrament of the LORD'S SUPPER, in the Parish
 Church aforesaid, immediately after Divine Service and Sermon,
 according to the Usage of the Church of England. In Witness
 whereof, we have hereunto subscribed our Hands, the said Twenty-
 fourth Day of April, 17--

George Abell,	{ Minister of the Parish and
	{ Parish Church aforesaid.
Thomas Johnson,	{ Church-Wardens of the said
Jacob Tomson,	{ Parish and Parish Church.

GEorge, James and Richard Williamson, of Farnworth, a-
 fforesaid, do severally make Oath, that they did see the said
 Charles Leadbetter, in the above written Certificate named, and
 who now present hath delivered the same into this Court, receive
 the Sacrament of the LORD'S SUPPER, in the Parish Church
 aforesaid, and that they did see the said Certificate subscribed by
 the said Minister and Church-Wardens.

George James.
 Richard Williamson.

The Test Oath.

I A. B. do declare, that I do believe there is not any Transub- Test Oath,
 stantiation in the Sacrament of the Lord's Supper, or in the
 Elements of Bread and Wine, at or after the Consecration thereof,
 by any Person or Persons whatsoever.

The Oath of Abjuration.

I A. B. do truly and sincerely acknowledge, profess, testify, and Abjuration Oath
 declare in my Conscience before God and the World, that our
 Sovereign Lord King George is lawful and rightful King of this
 Realm, and all other his Majesty's Dominions thereunto belonging.
 And I do solemnly and sincerely declare, That I do believe in my
 Conscience, that the Person pretended to be Prince of Wales, du-
 ring the Life of the late King James, and since his Decease pre-
 tending to be and taking upon himself the Stile and Title of King
 of England, by the Name of James the Third, or of Scotland by
 the Name of James the Eighth, or the Stile and Title of King of
 Great Britain, hath not any Right or Title whatsoever to the
 Crown of this Realm, or any other the Dominions thereto be-
 longing; and I do renounce, refuse, and abjure any Allegiance or
 Obedience to him. And I do swear, that I will bear Faith and
 true Allegiance to his Majesty King George, and him will defend

Of obtaining Employment Part II.

to the utmost of my Power against all traiterous Conspiracies and Attempts whatsoever, which shall be made against his Person, Crown or Dignity. And I will do my utmost Endeavour to disclose and make known to his Majesty and his Successors, all Treasons and traiterous Conspiracies which I shall know to be against him or any of them.

And I do faithfully promise to the utmost of my Power to support, maintain and defend the Succession of the Crown against him the said James, and all other Persons whatsoever; which Succession (by an Act intituled, An Act for the further Limitation of the Crown, and better securing the Rights and Liberties of the Subject) is and stands limited to the Princess Sophia, late Electress and Dutchess Dowager of Hanover, and the Heirs of her Body, being Protestants. And all these Things I do plainly and sincerely acknowledge and swear, according to these express Words by me spoken, and according to the plain and common Sense and Understanding of the same Words, without any Equivocation, mental Evasion, or secret Reservation whatsoever. And I do make this Recognition, Acknowledgment, Abjuration, Renunciation, and Promise heartily, willingly and truly, upon the true Faith of a Christian.

The Form of the Honourable Commissioners to exempt an Officer from serving any Parish or Ward Offices, or upon Juries, &c. Which the Officer must write over fairly, and send it in to the Commissioners, and a Majority of them will sign it.

An Exemption
from serving any
Office.

THESE are to certify, whom it may concern, that there is a Clause in the Patent to us from His Majesty, in the Words following, viz.

AND to the Intent that you the said William Burton, John Orlebar, John Windham Bowyer, David Papillon, William Cayley, George Lewis Scott, Thomas Bowly, Richard Bagot, Esqrs; and Sir Henry Pool, Bart. may be the better enabled to attend the Execution of this our Commission, and the Trust in you reposed, and may not be withdrawn from the same, WE do hereby declare our Will and Pleasure to be, That whilst this our Commission remains in Force, you our said Commissioners hereby constituted, or any of your Sub-Collectors, Deputies, Officers, or Agents, shall not be compelled to serve as Mayors, or Sheriffs, or on any Jury, or to appear or serve at any Assize or Sessions, or to bear any other Public Office, or Employment.

AND these are to certify, that A. B. is employed by us as [an assistant Officer in the Brewery.]

Excise-Office, London,
March 25, 17--

William Burton,
George Lewis Scott,
William Bowyer,

The Form of the Author's Discharge, with the
Collector's Letter accompanying it.

Worcester Excise-Office, Aug. 30th, 17--

Mr. Charles Leadbetter,

YOU are to deliver to the Bearer Mr. William Singer, who is appointed to succeed you, all Books, Papers, Vouchers, Abstracts, or whatever else relates to Stores belonging to his Majesty: The underwritten is a Copy of your Discharge.

The Collector's
Letter.

I am, Sir,

Your Friend, and Servant,

Charles Harris.

Bromsgrove, 2d O. R.

S I R,

Excise-Office, London, Aug. 19, 17--

MR. Charles Leadbetter, Officer of Bromsgrove, 2d Out-Ride, being order'd to remove to Henly O. R. and refusing to comply therewith, or to deliver up his Books to the Officer, who was to succeed him, as by your letter of the 17th Inst. the Commissioners have order'd, that the said Mr. Leadbetter be discharged.

The Author's
Discharge.

I am, Sir,

Your humble Servant,

Samuel Johnson.

The true Reason and Grounds of my Discharge was this.

UPON Sunday the 9th of August, Thomas Brooks, Officer at Henly-Arden, came to me at Alchurch very drunk; he said that he and I must change Divisions, but brought me no Note either from the Collector or Supervisor: For these Reasons I told him our Sitting was next Tuesday, and then I should have Orders from them, if it was so. He staid and dined with me, and went home far from being sober; and told his Supervisor, Mr. Anthony Gelder, that I refused to remove; which was actually false. Since the undeserved Treatment I have met with, may possibly be of service to others, I could not but think it proper to make it publick.

The Reason of
the Author's be-
ing discharged,

In Witness of the Truth hereof, I have hereunto put my Hand this 24th Day of June, 17--

Charles Leadbetter.

N. B.

Collector's Duty
as to Stores when
an Officer is dis-
charged.

N. B. When any Officers are ordered to be discharged, the Collector must not pay them their Salaries, till they have delivered up their Commissions, and their Acts of Parliament, and the several Books and Stores that belong to their Divisions.

Supernumerary,
when he offici-
ates, to have full
Salary, and
which Way he
is to be paid it.

When any Supernumerary * or other Person officiates for any sick Officer, the Collector must pay to such Person so much as will make up full Officers Salary for the Time he officiates, and what he so pays more than the Salary Book will bear, he must place it to the Account of Incidents: But when any Supernumerary, or other Person officiates for an Officer, who has Leave to be absent, the Revenue is not to bear the extraordinary Charge, but the absent Person must pay what shall be occasioned thereby.

Collector must
hire one to car-
ry the Portman-
teau, when the
Supernumerary
is officiating.

N. B. When the Supernumerary is officiating for any Officer, who is sick or absent; if the Collector shall want one to carry the Portmanteau, he must hire one; and if this be occasioned by Reason of an Officer's having Leave to be absent, the Charge must be born out of the Salary of such Officer; but if by Reason of the Sickness of an Officer, such Charge must be placed to the Account of Incidents.

* The Supernumerary, is a Commissioned Officer, who attends on the Collector, carries the Portmanteau from Place to Place during the Round; receives Half-pay; and when a Vacancy happens he goes into Business: As soon as that happens the Collector acquaints the Board, and they immediately order him another Supernumerary, who receives his Commission when he comes to his Collector.

C H A P. II.

Containing a Scheme of a Division; a Dimension-Book; the Rates of Exciseable Liquors, and other Duties under the Management of the Commissioners of Excise; and of making Seizures; a Voucher and Abstract for Beer, Ale and Cyder; a Voucher and Abstract, for Malt and Cyder; with their respective Indorsements.

A SCHEME

Ch. II. A Scheme of a Division.

A SCHEME of Bromsgrove, 2d O. R. 17--

N. B. The Officer is always to insert a Scheme of his Division in the Front of his Books, except the Dimension-Book.

Places Names.	Miles.	V. Stallers.	Malsers.	Pap. Mill.	Candle. M.	Soap M.	Starb. M.	Hop Plant.	Tanners.	Towers.
Redditch	$1\frac{1}{2}$	4	1		1					1
Foxlidiat, Bently-Heath	$2\frac{1}{4}$	2								
Hollick, Hewell	$2\frac{1}{2}$			1					1	
Tardibig	$1\frac{1}{2}$	1							1	
Duff-House	1		1						1	
Gambles	1		1							
Hollow-Tree	2	1								
Burcott	$2\frac{1}{2}$	5	1							
Stoney-Lane	2		1						1	
Cobley-Hill	1		1							
Upper Forge	$2\frac{1}{2}$								1	
Home	1									
SHORT Round.	$18\frac{3}{4}$	13	6	1	1				5	1
Rownigreen	$2\frac{1}{2}$	1								
Alchurch	1	4	2							
Lickey, Rose and Crown	$2\frac{1}{2}$	1								
Rednal-Green	1	1								
Holly Hill	2		1							
Long Bridge	$1\frac{1}{2}$	1								
Norfield	4	2	1							
West Heath	$1\frac{1}{2}$		1							
Kingsnorton	2	4								
Webb Heath	1		1							
Wetherick Hill	4	1								
Beely	$2\frac{1}{2}$	1		1						
Home	$2\frac{1}{2}$									
LONG Round	28	16	6	1	1					
SHORT Round	$18\frac{3}{4}$	13	6	1	1				5	
Total	$46\frac{3}{4}$	29	12	2	2				5	1

Fitz Lambe, Supervisor.
Charles Leadbetter, Officer.

N. B. The Officers must write their Christian Names at Length.

N. B. In those Divisions where Houses are to be survey'd cautiously, as mentioned Chap. III. Part II. there is another Column of Miles, including the cautionary Houses.


If you have any Starb-Makers, Dealers in Coffee, &c. there must be Columns titled for them in the Scheme; and there is sometimes a Column added to the right Hand; referring to the Malt, &c. Pages.

The Number of Miles, &c. in each Round must be added up, exclusive of the Number of Miles, &c. in the Place of your Residence. When you have any extraordinary Compounders, the Names of the Places where they reside must be enter'd under the Scheme, and also the Names of the Places in the Scheme, between which such Compounders lie, with the Distance from each.

A Specimen of a Dimension-Book. Part II.

A SPECIMEN of a DIMENSION-BOOK.

Richard Bellamy.

30		32.5		Under		Coolers,		8		Dp. 33.5		Dp. 30.	
M.T.	Ar.	Cop.	Ar.	Back.	1	2	3		1G.T.	Ar.	2G.T.	Ar.	
43.2	6.2	38.2	4.07	L. 114	25	21.6	25.4	T. 38.6	33.5	3.12	43.2	5.2	
42.	5.9	32.2	3.07	B. 81				G. 29.4	34.3	3.27	42.	4.21	
40.7	5.5	30.4	2.57	A. 32.7	1.74	1.29	1.80	A. 3.16	32.3	2.90	40.7	4.61	

10-11-68

No	H.	B.	L.	Cont	Nº	H.	B.	L.	Cont.
1	24.6	28	32	65	8	24.3	29	31.6	66
2	20	23.4	25.5	36	9	20.5	22.8	25.6	34
3	22	25	30	48	10	13	15	16.4	9
4	23.2	25	28.5	48	11	Mean	17.3	19.3	16
5	17	19	20	18	12	21.5	25.5	20	32
6	35.5	37.5	42.7	16c	13	19.5	20	19	20
7	25	30.2	32.5	74	14	24.5	29.5	33	72

The

*The EXPLANATION of the Dimension-Book.
Of the UTENSILS.*

I. In the *first* Column to the *left Hand*, at the *Top* of the Scheme, are entered the *Diameters* of the *Masb-Tun*, which stands upon *three* Areas, the *Diameters* being taken on every *ten* Inches from the *Bottom* upwards, (as are the *Copper* and *Guile-Tuns*.) II. In the *second* Column stands the *Areas* of those *Diameters*. III. In the *third* Column are the *Diameters* of the *Copper*, and in the *fourth* are the *Areas* of those *Diameters*. IV. In the *fifth* Column are the *Length* and *Breadth* of the *Back*, with the *Area* under the same. V. Following this, in the *6th*, *7th*, and *8th* Columns, are entered the *Diameters* of *three* round *Coolers*, (or open *Tubs*) marked 1, 2, 3, all set upon *mean* *Diameters*, with their respective *Areas* underneath the same. VI. Next are entered the *transverse* and *conjugate* *Axes* of an *oval* *Cooler*, with its *Area*. VII. Next to the *oval* *Cooler* are placed the *Dimensions* of two *Guile-Tuns*, taken in the middle of every *ten* Inches, as the *Masb-Tun* and *Copper* before-mentioned, with the *Areas* placed over-against the respective *Diameters*.

The *Figures* placed over the *Utensils* shew the respective *Depths* thereof.

Under the *Utensils* there is a *Blank* Scheme, ruled in the same manner as that above: This is ready for inserting the *Dimensions* of any new *Utensil*, when the old one is either demolished or laid aside; and when this is to be done, the old *Dimensions* must be *cross'd* over with the *Pen*, and the *Dimensions* of the new *Utensil* be enter'd underneath it, and the *Time* of its being gauged, must be placed over the new *Dimensions*.

Of the CASKS.

I. Underneath the *Utensils* are placed the *Dimensions* and *Contents* of the several *Casks*, against their respective *Numbers* in the *first* Column. The *Casks* themselves are number'd with *White Lead* and *Oil*, from 1 to 14, being the *Number* of *Casks* in the *Viſtualler's* *Cellar*. II. The Column *H.* is for the *Head*; that title *B.* is for the *Bung*; and those titled *L.* and *Cont.* are for the *Length* and *Content* in *Ale* *Gallons* gauged as a *Spheroid*. (See Part I. Page 149.)

N. B. The *Space* betwixt each *Cask* is left so wide, that upon the *Alteration* of any *Cask*, the new *Dimensions* may be enter'd just below; and when this is done, you must strike out the old *Dimensions*, by drawing your *Pen* through the whole *Line*.

The above *Method* must be observed for every *Viſtualler*, &c. in your *Division*, and must be transcribed into your *Stock-Book*, every 1st, 3d, 5th, 7th, and 9th *Round*.

The

*The present RATES of EXCISEABLE LIQUORS
and other DUTIES under the Management
of the Honourable COMMISSIONERS of EX-
CISE.*

		<i>l.</i>	<i>s.</i>	<i>d.</i>
Strong Beer.	S Strong Beer per Barrel	0	8	0
Small Beer.	Small Beer per Barrel	0	1	4
Cyder and Perry	Cyder and Perry per Hoghead [63 Galls.]	0	10	8
	Additional Duty	0	4	0
Vinegar.	Vinegar per Barrel [34 Galls.]	0	8	9
Verjuice.	Verjuice per Hoghead	0	6	8
Mead.	Mead or Metheglin per Gallon	0	0	11
Sweetets.	Sweetets per Barrel [31 Galls. $\frac{1}{2}$]	0	12	0
Low Wines.	Low Wines from Melasses, Sugar, Sugar Water, Scums, &c. or any Mixture therewith, per Gallon	0	2	6
Ditto.	Low Wines from malted, or unmalted Corn, per Gallon	0	0	10
Ditto.	Low Wines from Cyder or Perry, per Gallon	0	1	2
Ditto.	Low Wines from foreign Wine or Cyder, per Gallon	0	2	9
Spirits.	Spirits from Melasses, Sugar, Sugar Water, or Scums, &c. per Gallon	0	1	4
Ditto.	Spirits from Malt-Wash, Brewers Wash, Tilts, or any Sort of GRIST, per Gallon	0	2	6
Ditto.	Spirits from foreign Wine or Cyder, per Gallon	0	2	1

Malt, Candles, Soap, and Starch.

		<i>l.</i>	<i>s.</i>	<i>d.</i>
Malt.	Malt ——— per Bushel	0	0	9
Candles,	Candles, Tallow	0	0	1
	Candles, Wax	0	0	8
Soap.	Soap ———	0	0	1 $\frac{1}{2}$
Starch.	Starch ———	0	0	2

Silks, Callicoes, Linens and Stuffs.

		<i>l.</i>	<i>s.</i>	<i>d.</i>
Silks, Linen, and Stuffs.	Printed Silks, $\frac{1}{2}$ Yard wide, per Yard	0	1	0
	Silk Handkerchiefs, ———	0	0	4
	Callicoes ———	0	0	6
	Linen and Stuffs ———	0	0	3

Hops,

Ch. II. Rates of Exciseable Liquors, &c.

235

Hops, Chocolate, Coffee, and Tea.

	l.	s.	d.	
Hops ————	0	0	1	Hops,
Chocolate ————	0	2	3	Chocolate,
Coffee ————	0	3	0	Coffee, and
Tea ————	0	1	0	Tea.

also 25 l. per Cent. of the Gross Price of the Tea at the East India Company's Sales.

Silver and Gilt Wire.

	l.	s.	d.	
Silver Wire ————	0	0	6	Silver Wire, and
Gilt Wire ————	0	0	8	Gilt Wire.

For PAPERS of all Sorts, see Part II. Chap. XI.

For Tanners, Tawers, Oil-Dressers, and Parchment-Makers Leather, &c. Goods, see Part II. Chap. VII.

Glass, from March 25, 1746.

	l.	s.	d.	
All Materials or Preparations made Use of in making Crown, Plate, Flint, and all White Glass, per Hundred Weight, ————	0	9	4	Crown-Plate, Flint and White Glass.
N. B. There is also made, Enamelled and Stained or Coloured Glass of various Colours, as Black, Green, Blue, &c. which pay per Hundred Weight, ————	0	9	4	Coloured Glass.
All Materials or Preparations made Use of in making Bottles, and all other Green Glass, per Hundred Weight, ————	0	2	4	Green Glass.

Coaches, from March 25, 1747.

For every Coach, Berlin, Landau, &c. with four Wheels, the yearly Sum of four Pounds.

For every Calash, Chaise, and Chair with two Wheels, the yearly Sum of two Pounds.

Plate-Tax.

Every Person working or dealing in Silver Plate, to pay forty Shillings yearly for a Licence.

Every private Person having 100 Ounces or upwards of Silver Plate for Use, are to pay five Shillings yearly for every such 100 Ounces so used or kept in their Possession.

The Excise on LIQUORS IMPORTED.

From Foreign Parts.	l.	s.	d.	From Foreign Parts.
Ale or Beer, Black and Spruce per Barrel ————	0	15	0	Ale, &c.
Mum, the Barrel, viz. 32 Gallons ————	1	5	0	Mum, Cyder,
Cyder, or Perry, the Tun ————	14	10	3	&c.
Brandy, Aqua Vitæ, Spirits, or Strong Waters, being single, per Gallon ————	0	6	2	Brandy, &c.
Brandy, &c. as before, being double, or above Proof, per Gallon, ————	0	11	8	Ditto Double.
N. B. Rum, Aqua Vitæ, Spirits, or Strong Waters from the British Plantations in America, being single, per Gallon, ————	0	4	8	From British Plantations in America.
Ditto, being double or above Proof, per Gallon, ————	0	8	8	

PART II.

Q

N. B.

N. B. 'These Liquors are not to be landed before due Entry
' be made with the Collector of Excise at the Port of Im-
' portation, or before the Excise be fully satisfied and paid,
' and a Warrant for the Landing or Delivering signed by
' the said Collector ; or without the Preference of the Excise
' Officer, upon Forfeiture, or the Value.'

From Guernsey,
&c.

From Guernsey, Jersey, Sark, or Alderney.

Brandy, &c.

Brandy, Aqua Vita, Strong Waters, or Spirits, per } l. s. d.
Gallon _____ } 0 6 2

Vinegar.

Vinegar, per Gallon (Custom) _____ } 0 1 3

Cyder, &c.

Cyder or Perry per Hoghead _____ } 0 14 8

Ale, &c.

Beer and Ale, per Barrel _____ } 0 8 0

Mum per Barrel (32 Gallons) _____ } 1 5 0

Cyder or Perry, coming as Presents for private Use, bringing
a Certificate, pays 4s. per Hoghead.

All other Exciseable Liquors the same Duties as paid in this
Kingdom.

Before the Landing of any Liquors from Guernsey, Jersey,
&c. Oath must be made by the Importer before the
Collector of the Customs, that they are of the Growth
& Manufacture of the said Islands, and not made from,
or mixed with any Foreign Liquors, or Materials.'

N. B. Upon Exportation of any of the above Liquors, there is
no Drawback.

Instructions for the making of Seizures.

THE Officer, when he makes a Seizure of
Brandy, Rum, &c. he must lay his Hand upon
the Casks, Vessels or Package so seized, and he must
declare that he seizes such Brandy, Rum, &c. and
likewise the Casks, Vessels, or Package containing
the same, for the proper Use of his Majesty and him-
self. But in Case the Officer happens to be alone
when he makes such Seizure, he must afterwards, in
the Presence of Witnesses, lay his Hand again upon
the Casks and Vessels, and make the Declaration as
before directed.

All Informations on Seizures must be laid in the Name
or Names of the Officer or Officers who make such Seizures.

Worcester.

to November 8, next following, 17 -- Third Round

[illegible]

Ch.II. The Ale and Beer Abstract.

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Worcester-Collection, Bromsgrove 2d Out-Ride, Abstract for Ale and Beer, from September 26, to November 8 next following, 17— Third Round.

Victuallers Names, &c.	X	VI. Cyd.	L.	s.	d.	The Form of an Ale and Beer Abstract.
William Harwey	26 $\frac{1}{2}$	4 $\frac{1}{2}$	10	18	0	
John Rawlins	26 $\frac{3}{4}$	9 $\frac{1}{2}$	11	6	8	
William Ballamy	7 $\frac{3}{4}$	2 $\frac{1}{4}$	3	5	0	
John Lewis	8	2 $\frac{3}{4}$	3	7	8	
William Taylor	11 $\frac{1}{2}$	6 $\frac{3}{4}$	4	19	0	
Robert Haycock	7 $\frac{1}{4}$	5	3	4	8	
Mary Jordan	7 $\frac{1}{2}$	4	3	7	4	
Francis Carpenter	8 $\frac{1}{4}$	4	3	11	4	
1st Column	103 $\frac{1}{2}$	38 $\frac{3}{4}$	43	19	8	
Matt. Saunders	10 $\frac{3}{4}$	7 $\frac{1}{4}$	4	16	4	
James Rutter	6 $\frac{1}{2}$	5	2	19	4	
Henry Leadbury	2 $\frac{3}{4}$	2	1	4	8	
Benj. Duce	7 $\frac{1}{4}$	4 $\frac{1}{2}$	3	4	0	
Tho. Durling	5	4	2	11	4	
Henry Ballamy	9 $\frac{1}{4}$	2 $\frac{3}{4}$	3	17	8	
Richard Ballamy	9 $\frac{1}{2}$	5	4	2	8	
Isaac Oakal	14	8 $\frac{1}{4}$	6	3	0	
John Farr	12 $\frac{1}{2}$	8 $\frac{1}{2}$	5	11	4	
2d Column	78 $\frac{1}{2}$	46 $\frac{3}{4}$	34	10	4	
William Hall	21 $\frac{3}{4}$	12	9	8	8	
John Onion	6	3	2	14	8	
Edward Blun	2 $\frac{3}{4}$	1 $\frac{1}{4}$	1	4	4	
Tho. Stanford	Nil.	Nil.				
Geo. Withers	6 $\frac{1}{4}$	3 $\frac{1}{4}$	2	18	4	
Jos. Townsend	17 $\frac{1}{4}$	10 $\frac{1}{2}$	7	16	0	
Esber Handly	6 $\frac{1}{4}$	3 $\frac{1}{4}$	2	14	4	
John Fitter	8 $\frac{3}{4}$	5 $\frac{1}{4}$	3	17	4	
Sam. Adkins	15	4 $\frac{1}{4}$	6	5	8	
3d Column	85 $\frac{1}{4}$	43	36	19	4	
Mary Povey	1 $\frac{1}{4}$	1	0	11	4	
John Andrews	2 $\frac{1}{2}$	1 $\frac{3}{4}$	1	2	4	
James Ford	7	3 $\frac{1}{2}$	3	0	8	
Tho. Pbitbian	2 $\frac{1}{2}$	2 $\frac{1}{2}$	1	3	4	
Eliz. Wagstaff		5 $\frac{1}{4}$	1	18	4	
4th Column	13 $\frac{1}{4}$	8 $\frac{3}{4}$	7	16	0	
1st Column	103 $\frac{1}{2}$	38 $\frac{3}{4}$	43	19	8	
2d Column	78 $\frac{1}{2}$	46 $\frac{3}{4}$	34	10	4	
3d Column	85 $\frac{1}{4}$	43	36	19	4	
4th Column	13 $\frac{1}{4}$	8 $\frac{3}{4}$	7	16	0	
Total	280 $\frac{1}{2}$	137 $\frac{1}{4}$	123	05	4	

Q 2

Charles Leadbetter, Omcer.

Worcester Collection, Bromsgrove 2d Out-Ride, VOUCHER for Ale and Beer, from September 26, to November 8 next following, 17— Third Round.

Indorsement of Ale and Beer Abstract. P. II.

N. B. The foregoing **ABSTRACT** * must be wrote upon a large Sheet of Paper, and folded up in *Long O'Favo*, and indorfed as under.

How Ale and
Beer Abstract,
must be indorfed.

EXCISE 3d Round, 17--

Worcester-Collection,

Bromsgrove 2d O. R.

ABSTRACT

From *Sep.* 26, to *Nov.* 8, following.

		<i>l.</i>	<i>s.</i>	<i>d.</i>
X	280 $\frac{1}{2}$	123	5	4
VI	137 $\frac{1}{4}$			

Fitz. Lambe, Supervisor.
Charles Leadbetter, Officer.

Worcester-

* All *Abstracts* remain in the Custody of the Collector, but the *Vouchers* go up to the Board.

N. B. The following VOUCHER must be wrote upon a large Sheet of Paper, and folded up in Long Office, and indorsed as under.

M A L T 3d Round, 17--
Worcester Collection,
Bromsgrove Second Out-Ride
V O U C H E R;

From Sept. 26, to Nov. 8, following.

Beß.	Floor	l.	s.	d.
5501	Nil.	} 167 6 6		
Cyder	5½			

CASH, One Hundred and Sixty-Seven
Pounds Six Shillings and Six-pence.

Fines } Nil.
Surcharges }
Arrears. }

Fitz. Lambe, Supervisor.
Charles Leadbetter, Officer.

CHIEF CLERK'S OFFICE
NEW YORK, N.Y.

13012
13013
13014

Pounds Six Shillings and Six pence.

[illegible]

1st Column	1688	Math.	7.	1.	d.
2d Column	1878				
3d Column	1935				
Total	5501			167	6 6

N.B. The Amount of the three Columns of this *Maid* VOUCHER are placed (for want of Room) near the *Middle* of the *Voucher*, which ought to have been placed at the *End* of the last Column, as is done in the *Maid* and *Bar* VOUCHERS.

ASH, One Hundred and Sixty-seven Pounds
Six Shillings and Six-pence.

Charles Leadbetter, Officer.

1688	1	5	$\frac{3}{4}$
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1935

239 Worcester-Collection, Bromsgrove 2d Out-Ride VOUCHER for Malh, from Sept. 26, to Nov. 8, next following, 17-- Third Round.

	Ciff. and Couch.	Floor	Cydar	Ciff. and Couch.	Floor	Cydar	Ciff. and Couch.	Floor	Cydar
September 27	62			September 29	54		September 30	56	
October 30	64			October 31	58		October 1	61	
October 5	63			October 2	53		October 3	53	
October 10	62			October 3	58		October 4	54	
October 15	65			October 4	56		October 5	51	
October 21	65			October 5	59		October 6	60	
October 27	55			October 6	54		October 7	60	
October 31	61			October 7	61		October 8	60	
October 5	65			October 8	60		October 9	55	
October 11	65			October 9	42		October 10	33	
October 19	53			October 10	44		October 11	4	
October 25	63			October 11	42		October 12	507	
October 30	55			October 12	42		October 13	1	
October 32	56			October 13	43		October 14	55	
October 17	40			October 14	47		October 15	60	
October 22	42			October 15	41		October 16	55	
October 27	2			October 16	2		October 17	54	
October 31	2			October 17	41		October 18	50	
October 5	65			October 18	42		October 19	57	
October 11	65			October 19	43		October 20	56	
October 19	53			October 20	43		October 21	53	
October 25	63			October 21	43		October 22	53	
October 30	55			October 22	47		October 23	55	
October 32	56			October 23	41		October 24	55	
October 17	40			October 24	41		October 25	53	
October 22	42			October 25	2		October 26	50	
October 27	2			October 26	2		October 27	50	
October 31	2			October 27	2		October 28	50	
October 5	65			October 28	2		October 29	50	
October 11	65			October 29	2		October 30	50	
October 19	53			October 30	2		October 31	50	
October 25	63			October 31	2		October 1	50	
October 30	55			October 1	2		October 2	50	
October 32	56			October 2	2		October 3	50	
October 17	40			October 3	2		October 4	50	
October 22	42			October 4	2		October 5	50	
October 27	2			October 5	2		October 6	50	
October 31	2			October 6	2		October 7	50	
October 5	65			October 7	2		October 8	50	
October 11	65			October 8	2		October 9	50	
October 19	53			October 9	2		October 10	50	
October 25	63			October 10	2		October 11	50	
October 30	55			October 11	2		October 12	50	
October 32	56			October 12	2		October 13	50	
October 17	40			October 13	2		October 14	50	
October 22	42			October 14	2		October 15	50	
October 27	2			October 15	2		October 16	50	
October 31	2			October 16	2		October 17	50	
October 5	65			October 17	2		October 18	50	
October 11	65			October 18	2		October 19	50	
October 19	53			October 19	2		October 20	50	
October 25	63			October 20	2		October 21	50	
October 30	55			October 21	2		October 22	50	
October 32	56			October 22	2		October 23	50	
October 17	40			October 23	2		October 24	50	
October 22	42			October 24	2		October 25	50	
October 27	2			October 25	2		October 26	50	
October 31	2			October 26	2		October 27	50	
October 5	65			October 27	2		October 28	50	
October 11	65			October 28	2		October 29	50	
October 19	53			October 29	2		October 30	50	
October 25	63			October 30	2		October 31	50	
October 30	55			October 31	2		October 1	50	
October 32	56			October 1	2		October 2	50	
October 17	40			October 2	2		October 3	50	
October 22	42			October 3	2		October 4	50	
October 27	2			October 4	2		October 5	50	
October 31	2			October 5	2		October 6	50	
October 5	65			October 6	2		October 7	50	
October 11	65			October 7	2		October 8	50	
October 19	53			October 8	2		October 9	50	
October 25	63			October 9	2		October 10	50	
October 30	55			October 10	2		October 11	50	
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October 22	42			October 13	2		October 14	50	
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October 5	65			October 26	2		October 27	50	
October 11	65			October 27	2		October 28	50	
October 19	53			October 28	2		October 29	50	
October 25	63			October 29	2		October 30	50	
October 30	55			October 30	2		October 31	50	
October 32	56			October 31	2		October 1	50	
October 17	40			October 1	2		October 2	50	
October 22	42			October 2	2		October 3	50	
October 27	2			October 3	2		October 4	50	
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October 5	65			October 5	2		October 6	50	
October 11	65			October 6	2		October 7	50	
October 19	53			October 7	2		October 8	50	
October 25	63			October 8	2		October 9	50	
October 30	55			October 9	2		October 10	50	
October 32	56			October 10	2		October 11	50	
October 17	40			October 11	2		October 12	50	
October 22	42			October 12	2		October 13	50	
October 27	2			October 13	2		October 14	50	
October 31	2			October 14	2		October 15	50	
October 5	65			October 15	2		October 16	50	
October 11	65			October 16	2		October 17	50	
October 19	53			October 17	2		October 18	50	
October 25	63			October 18	2		October 19	50	
October 30	55			October 19	2		October 20	50	
October 32	56			October 20	2		October 21	50	
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October 27	2			October 23	2		October 24	50	
October 31	2			October 24	2		October 25	50	
October 5	65			October 25	2		October 26	50	
October 11	65			October 26	2		October 27	50	
October 19	53			October 27	2		October 28	50	
October 25	63			October 28	2		October 29	50	
October 30	55			October 29	2		October 30	50	
October 32	56			October 30	2		October 31	50	
October 17	40			October 31	2		October 1	50	
October 22	42			October 1	2		October 2	50	
October 27	2			October 2	2		October 3	50	
October 31	2			October 3	2		October 4	50	
October 5	65			October 4	2		October 5	50	
October 11	65			October 5	2		October 6	50	
October 19	53			October 6	2		October 7	50	
October 25	63			October 7	2		October 8	50	
October 30	55			October 8	2		October 9	50	
October 32	56			October 9	2		October 10	50	
October 17	40			October 10	2		October 11	50	
October 22	42			October 11	2		October 12	50	
October 27	2			October 12	2		October 13	50	
October 31	2			October 13	2		October 14	50	
October 5	65			October 14	2		October 15	50	
October 11	65			October 15	2		October 16	50	
October 19	53			October 16	2		October 17	50	
October 25	63			October 17	2		October 18	50	
October 30	55			October 18	2		October 19	50	
October 32	56			October 19	2		October 20	50	
October 17	40			October 20	2		October 21	50	
October 22	42			October 21	2		October 22	50	
October 27	2			October 22	2		October 23	50	
October 31	2			October 23	2		October 24	50	
October 5	65			October 24	2		October 25	50	
October 11	65			October 25	2		October 26	50	
October 19	53			October 26	2		October 27	50	
October 25	63			October 27	2		October 28	50	
October 30	55			October 28	2		October 29	50	
October 32	56			October 29	2		October 30	50	
October 17	40			October 30	2		October 31	50	
October 22	42			October 31	2		October 1	50	
October 27	2			October 1	2		October 2	50	
October 31	2			October 2	2		October 3	50	
October 5	65			October 3	2		October 4	50	
October 11	65			October 4	2		October 5	50	
October 19	53			October 5	2		October 6	50	
October 25	63			October 6	2		October 7	50	
October 30	55			October 7	2		October 8	50	
October 32	56			October 8	2		October 9	50	
October 17	40			October 9	2		October 10	50	
October 22	42			October 10	2		October 11	50	
October 27	2			October 11	2		October 12	50	
October 31	2			October 12	2		October 13	50	
October 5	65			October 13	2		October 14	50	
October 11	65			October 14	2		October 15	50	
October 19	53			October 15	2		October 16	50	
October 25	63			October 16	2		October 17	50	
October 30	55			October 17	2		October 18	50	
October 32	56			October 18	2		October 19	50	
October 17	40			October 19	2		October 20	50	
October 22	42			October 20	2		October 21	50	
October 27	2			October 21	2		October 22	50	
October 31	2			October 22	2		October 23	50	
October 5	65			October 23	2		October 24		

Worcester Collection, Bromsgrove 2d Out Ride,
Abstract for Malt, from September 26 to November 8, next following, 17-- Third Round.

The Form of a
Malt Abstract.

Malters Names, &c.	Cistern and Couch.	Floor	Cyder *	l.	s.	d.
Thos. Sheward	901			27	0	7
Jos. Smith	734			22	0	4 $\frac{1}{2}$
Francis Knight	453			1	11	9 $\frac{1}{2}$
Eliz. Wagstaff			5 $\frac{1}{2}$	2	6	
1st Column	1688		5 $\frac{1}{2}$	52	18	9 $\frac{1}{2}$
Henry Parsonage	820			2	12	0
Henry Sheward	1058			31	14	9 $\frac{1}{2}$
2d Column	1878			56	6	9 $\frac{1}{2}$
John Harrison	507			15	4	2 $\frac{1}{2}$
William Hall	1076			32	5	7
Richard Bailes	53			1	11	9 $\frac{1}{2}$
Thomas Hunt	147			4	8	2 $\frac{1}{2}$
Thomas Hanson	152			4	11	2 $\frac{1}{2}$
3d Column	1935			58	0	11 $\frac{1}{4}$
1st Column	1688		5 $\frac{1}{2}$	52	18	9 $\frac{1}{2}$
2d	1878			56	6	9 $\frac{1}{2}$
3d	1935			58	0	11 $\frac{1}{4}$
Total	5501		5 $\frac{1}{2}$	167	6	6

Charles Leadbetter, Officer.

* The Duty of Cyder is 14s. 8d. per Hoghead; 6s. 8d. of which is charged in the Excise, and 8s. in the Malt Voucher.

Cistern	21	40	121	WV	WV	WV
Couch	21	40	121	WV	WV	WV
Floor	21	40	121	WV	WV	WV
Cyder	21	40	121	WV	WV	WV

N. B.

Indorsement of the Malt Abstract. Part II.

N. B. The foregoing ABSTRACT must be wrote upon a large Sheet of Paper, and folded up in Long *Obavo*, and indorised as under.

How a Malt Abstract must be indorised.

MALT 3d Round 17

Worcester-Collection.

Bromsgrove 2d O. R.

ABSTRACT

From Sept. 26, to Nov. 8, following.

Best	Floor	l.	s.	d.
5492	Nil.	167	6	6
Cyder	5 3/4			

Fitz Lambe, Supervisor.
Charles Leggett, Officer.

* Is he that keeps the House where the Collector holds his sitting.

C H A P. III.

Shewing the Business and Duty of those Officers of the Excise who survey Victuallers, By-Brewers, and Common-Brewers.

HAVING in the preceding Chapters very plainly and fully instructed the young Officer in the Methods to be made Use of for obtaining Employment in the Excise, &c. I shall now proceed in shewing him the rest of his Duty, and the Nature of his Business, when he is an established Officer.

It is requisite the Officer should demean himself respectfully to all Magistrates, and civilly to all Persons whom he surveys; and he must shew his Commission (for which Reason he must always have it with him) to any Persons that he surveys, if they demand to see it. It is absolutely necessary, that the Officer should be skillful in gauging of all Manner of Vessels, Casks, or Utensils; and he must provide himself with proper Instruments for taking the Dimensions of all Vessels, containing exciseable Liquors, and for finding the Contents, or Areas of such Vessels, &c. The following are the Names of the seven Instruments which are enjoined by the Commission-ers; and whoever is not provided with them, is not regularly qualified to be an Officer.

1. A *Cane*, or *Holly-Stick* *incbed* and *decimally divided*. See Plate II. The proper Instruments particularized.

2. A *Sliding Cane*, for taking the Dimensions of large Cisterns, Coppers, &c.

3. A *Sliding Rule* for the expeditious casting up of Gauges, and for taking the Dimensions of small Tubs, &c. See the Plate.

4. A *Box and Tape* for taking *Couch* and *Floor Gauges* of Malt.

5. A *Brass Plate* for taking Malt Gauges.

6. A *Cork Plate* or *Plum*, for taking Gauges of Ale or Beer when working in the Vat.

7. A *Brass Receiver* for fishing up the Barley from the Bottom, or any other Part of the *Cistern*, &c.

N. B. Some have also *Brenan's* four Foot Sliding Rule.

Whatever Entries and Notices are given by *Common Brewers*, or by other Persons liable to the Survey of Officers of Excise, must be carefully kept on *Files*, lock'd up by the respective *Office Keeper**; and as soon as the *Office-Keeper* receives such Entry or Notice, he must, before he puts the same upon the File, write upon it the Day of the Month, and Year of our Lord, when he received it. The *Officer* must frequently examine the above-mentioned Files, and as soon as he finds any new try Files.

Q 4

* Is he that keeps the House where the Collector holds his Sitzings.

After Entries are made, the Officer must immediately repair to those who made them.

Officer must never write any one's Entry for him.

Malsters and Hop-Planters Entries made annually.

Foot-walks must be surveyed early every Morning.

Rides how to be surveyed.

Of Rides that can be surveyed in one Day.

Of Rides that can't be rid under two Days.

Must not always ride the same Rounds.

Must take as many Gauges, and find out the best Lengths possible.

His Duty when the Tunnage is short of the best Lengths per Gauge.

new Entry or Notice given, he must copy the same into a Book kept at the Excise Office for that Purpose; and the Office Keeper must sign all such Copies, to testify that they are true. The Officer, as soon as he possibly can, after such Entry is made, must repair to, and require the Person who made the same, to shew him every Place and Thing mentioned in the Entry: He must immediately describe the *Situation* of the Rooms, &c. in his Entry-Book, and mark the Particulars in such a Manner, as may enable him, his Supervisor, or any other Person readily to find the same at any Time.

Great Inconveniencies have arisen from the Officers writing Entries for those who are subject to their Survey; and therefore, it is strictly enjoined, that no Officer presume to write any Person's Entry for him. *N. B.* The *Malsters* and *Hop-Planters* Entries which are to be made annually, must be copied into Books by themselves. The Officer must reside at such Place in his Division, as the *Collector* and *Supervisor* approve of; so that he may be able to secure, as near as possible, every Branch of the Revenue committed to his Care. And as early as possible every Morning, he must survey his whole Division, if it be a *Foot-Walk*; but if he has a *Ride*, he must survey his Place of Residence before he goes into the *Ride*, except there be Gauges depending in the *Ride*, which makes it necessary for him to hasten thither; and in such Case, he may survey that Part of his *Ride*, before the Place he resides at. Then as to such Officer who has a *Ride*, if he can survey his *Ride* in *one* Day, he must survey the same at least *four* Times a Week; and he is to stock it *three* Times, or oftner, if he see Occasion; and if he cannot possibly ride it under *two* Days, he must survey and stock the same *three* Times a Week, or at least *five* Times a Fortnight; But then this is not to be done in one constant Course, nor must he begin always at the same Place; but he must sometimes ride the same round twice following, and he must so contrive it as to double at such Times, and upon such Houses, when and where the most useful Gauges and Observations may be had; so that by surveying at Times *unexpected*, he may get the more Gauges, and probably discover unfair Practices. The Officer must take as many Gauges in the *Ride* as possible, and must use his utmost Endeavour to find out the best Length * of every Victualler in his Division. And at such Times as he cannot have a Gauge, and he finds the *cleansing* for *Tunnage* short of the best Lengths, which he used to have by Gauge, he must inform himself whether the same Quantity of Malt was used in that Brewing, which was used when he had such best Length; and he must likewise observe, whether the same Quantity be tunned, and whether any *Plus-Drink*† remains; and he must use his best Endeavour to draw a true Confession from the Victualler, whether any has been sold, drank, or otherwise disposed of; or whether

* Length is the Quantity of Gallons brewed at each Time.

† *Plus Drink* signifies what is left after the Cask is filled.

whether the same Quantity was made as in any former Brewing; and enter a *Memorandum* thereof immediately, at the End of his Stock, that he may be able to justify his Charge on any Occasion, when called upon for that Purpose.

The Officer must observe, that the most material Part of his Division may be more closely attended on; and where it falls out that any inconsiderable Victualler lies so very remote, as to cause any Neglect of more considerable Houses, in that Case he may make such *cautionary* Surveys only, as the Collector and Supervisor shall think necessary and approve of: But before he offers to take that Liberty, the Collectors and Supervisors Directions must be entered in the Front of every Excise-Book, and signed by themselves. If in his Division he has any *Compounders*, he must enter their Names, and Places of Abode, in some convenient Part of his *Stock-Book*, in order to survey them cautiously; and upon each Survey he must enter their Stocks and Gauges, as he does By-Victuallers; but he must distinguish from the rest such Drink in Stock, as was brewed since he last surveyed them. The Officer is to observe, that when his Surveys

Of Victuallers who live remote.

Of Compounders.

are made by *Night*, they must be in the Presence of a *Constable*, or other lawful Officer of the Peace, in case he cannot have Admittance without one; and when he makes a Demand of Entrance into any House under his Survey, he must for a reasonable Time knock, ring, or call at the Gate, or Dwelling House, or such other Place where he has usually procured Entrance; and if he is not admitted on so doing, he must with a plain and audible Voice, make a Demand at the said Gate, and Dwelling-House, or other Place, in Words to the following Effect:

Surveys made in the Night must be in the Presence of a Constable, &c. How Entrance must be demanded.

"I, *Gauger*, or Officer of Excise, do demand Entrance into the House of Mr. *to gauge, survey, or take an Account of his as the Law directs.*"

The Form of demanding Admittance.

He must observe, that as the Demand must be made in the Presence of a *Constable*, if it be by *Night*, he must mention in his Demand that a *Constable* is with him: And if the Demand be made in the *Day-Time* he should, if possible, have some sufficient Witness present, to prove his making such Demand; and after he has so done, he is to stay a reasonable Time before he goes from the House, or Place; and he must enter the Whole of his Proceedings in his Book; and when Entrance is denied him, he must, if possible, acquaint the Person or his Servant, with the Danger thereof, and the Penalty incurred by so doing.

Proper to have Witness when Entrance is demanded in the Day-time. Must stay a reasonable Time before he departs.

The Officer as he goes round his Division in a Morning, or the Place of his Residence, must take Gauges of all the depending *Guiles*, and he must return on such as he found at work, and on such as he suspects will work, so as to take a Gauge of each Wort, as soon after it comes out of the Copper as possibly he can, that he may, if possible, have distinct Gauges both *hot*

Must acquaint the Person, or his Servant, of the Danger of depending Guiles.

Must get a Gauge as soon as it comes out of the Copper,

* A *Gulle* signifies all the Brewing of Worts put together.

When the Brewing must be taken into Stock. Where his Division is very large. Of a House twice surveyed in one Day. The Word *Ditto* to be avoided.

and cold, on each Wort; and he must take into Stock every Brewing the next Day after it is tunned, if the Nature of his Business will permit: But if his Division is so large, that he cannot have a Gauge on each Wort distinctly at all the Victuallers, he must take the Gauges on the Worts distinctly, at as many Houses as he can; sometimes at one, and sometimes at another: And when the Officer makes two or more Surveys at one House, in one Day, the Day and Hour must be entered to each Visit, and not the Word *Ditto* or *Do.*; nor must he when Diameters, &c. are to be repeated, or in any other Case, write in his Books the Word *Ditto*. The Officer when he enters a Depth, or dry Inches, a Diameter, or Length and Breadth, which is less than 10 Inches, he must place a *Cypher* before it; if it be a Depth under one Inch, two *Cyphers* are to be placed before the *Decimal*; or if it be a Depth, Diameter, &c. in even Inches, he must put a *Cypher* in the Place of *Decimals*; and after he has entered his Gauge of all the Worts, and before he leaves the House, he must observe to dash through every vacant Column in the Gauge Place. When the Officer takes a Gauge of Wort, so warm as to require the Allowance of one Tenth Part for Wash and Waste, he must annex (*W*) to the Character of such Wort, and deduct one Tenth Part thereof in the Casting; and when he takes the last Wort of a new Guile, if any former were not cleansed, upon his Morning Survey he must be sure to take an Account thereof, either by Gauge or

Of the using
Cyphers.

The Officer
must dash thro'
all the vacant
Columns.

Deduction
where the Worts
are gauged
warm, &c.

Must take Gau-
ges as often as
he can.

Should see it
returned, if
possible.

How the Officer
may compel
them to give
him Notice of
returning.

Small Beer sold
raw.

Must never take
Gauges, Stocks,
&c. on loose
Paper.

Tunnage. He must also take Gauges of the Goods as often as he can, and enter them in his Book, though at the Time of taking thereof the Worts are not fit to be gauged. When it happens that a Victualler, (or common Brewer) declares that the Small Wort of one Brewing will be brought over the Goods of a succeeding Brewing, the Officer must gauge such Wort, and characterize it with *R*; and if upon his following Surveys he finds the Wort so returned or brought over, which, if possible, is to be done in his Sight, he must write in his Book that the said Wort was returned, and in such Case no Charge is to be made upon it.

The Officer to prevent his Attendance longer than is necessary, to see the Worts returned, must advise the People to give him Notice of the exact Time when they intend to do it; which he may bring them to comply with, by charging the said Worts, when they refuse or neglect to give such Notice to him. And seeing several Persons do dispose of, or sell their Small Beer raw, or unboiled, the Officer must endeavour in such Case to survey before any is disposed of, and take a Gauge thereof, either in the *Under Back** or Cooler, or other Vessel where he finds it, and charge the same with the Duty. The Officer must never take Gauges, Stocks, &c. on loose Paper, but he must enter them on his Book, before he leaves each House, the Stocks, Gauges, &c. taken at such House, and the Time

* Under Back, is a Cooler that stands under another.

Time of his Survey. The Officer must be sure to cast up his Gauges every Night, and also to bring forward his Charges, *viz.* 1. From the best separate Gauges of the strong Worts added together: Or, 2. from a Gauge of those Worts mixed, if it be better than the separate Gauges thereof: Or, 3. from the Stock if that exceeds the best Gauge, he must make the Charge of each Brewing, which is to be set forward separate.

The Officer must make his Figures large, and keep all his Books fair; he must not at his Peril scrape, scratch, or alter any Figure, Character, or Remark, in any of his Books; but if he happens to make any Mistake in entering his Gauges, Stocks, &c. he must draw a small black Line through such Mistake, so that the Original may appear, and enter a *Memorandum* what the Right is. And *note*, the Mistakes which may happen in transcribing the Areas of Utensils, or Contents of Casks, must be rectified and signed by the Supervisor. The Officer must not survey in a cursory or careless Manner, but with such Care and Circumspection, as is necessary to prevent his being imposed upon; for it is expected that he should use his utmost Diligence, to prevent or detect all Frauds in every Duty under his Care and Management: And when he discovers any Fraud, or any Practice, which appears to be with a fraudulent Intent, he must not offer to make any *Composition* for the same, but must give a true Account thereof in due Time to the Collector, or Supervisor, who are to acquaint the Board therewith, to the End that the Person may be legally prosecuted for the same.

The Officer must stock the Victuallers where he resides, at such Times as may least hinder his taking Gauges; though he stock not all in *one* Day, yet so that the whole be stocked three Times a Week, or at least five Times a Fortnight; and he must never be above three Days wide in the said Stocks. When the Officer has in his Division a Victualler, who brews himself, and also takes in Drink from common Brewers, or Victuallers, he must not intermix the Stock of these two Sorts of Drink, but must keep them separate, even though the Drink bought in be in the Victualler's own Cask; and when it comes in, he must write against the Stock the Brewer's or Victualler's Name, and the Division it came from, to the End he may not be imposed upon, but may charge such Victualler with the Duty for all the Drink he brews; and where he finds just Cause to suspect a Fraud, he must charge the whole Increase he finds in Stock, and let the Victualler discharge himself by Course of Law as he can. The Officer must keep all his Victuallers Casks fairly numbered with White Lead and Oil, and reduce the Numbers to as few as he can, that the Stocks may not be extended to an unnecessary Length. *Note*, That the Number and Contents of all the Victuallers Casks, and the Areas of all their Mash-Tuns, Under-Backs, Coppers, Backs, Guile Tuns, or other Utensils, in common Use, must be transcribed from his Dimension-Book into every new Survey Book.

Gauges must be cast up every Night.

In what manner this must be done.

Figures must be made large.

No scraping, altering, &c. at the Officer's Peril.

How Mistakes are to be rectified without it.

Mistakes in transcribing Areas, &c. how

to be rectified.

All Surveys must be made with Circum-

spection.

Frauds must never be com-

pounded.

Victuallers where to be stocked.

Must never be above three

Days wide in taking Stock.

Casks must be kept fairly

marked.

Number reduced to as few as possible.

The Officer must give every one timely Notice of the sitting Days, &c.

The Officer must give all the People in his Division, who are to pay Duty, or make their Entries, timely Notice of the sitting Days. And he must attend at the *Excise-Office* at such Times, as the Collector shall appoint, and bring his Survey and Dimension-Books, his Acts of Parliament, Instructions, General Letters, and Instruments at his utmost Peril.

The Officer's Duty concerning By-Drinks. Must receive no Money for By-Drinks, without giving a Receipt

The Officer must diligently enquire after, and be careful to take an Account of all Drink sold at Fairs, Wakes, Revels, or any other public or private Meetings, and then to demand and receive the Duty for the same; but he must not, at his Peril, receive the Whole, or any Part of the Duty due for such *By-Drink*, without giving a Receipt at the same Time for the Money he receives; expressing therein the Quantity and Quality of the Drink, the Day when charged, and the Day he receives the Money; Also he must keep Stock on all By-Brewers, taking

Must keep Stock on By-Brewers.

Gauges on as many as he can, and enter them in his Book in the same manner as Victuallers; only to distinguish them by the Words (*By-Br.*) but when the Drink is in Casks, and he has charged all that they have in their Possession, his Surveys need only be cautionary, and not so frequent as upon Victuallers. The Persons who usually sell Drink at Fairs, Wakes, &c. and brew as well for their own Families as for Sale, have a Right to enter, and pay the Duty for what Drink they sell at the Fair only; and are not required to enter all in their Possession: But then the Officer is to be satisfied that they shew him all their Drink, that he may have recourse to, and keep Stock upon it: And the Officer may admit them to make *Post Entries*, if they will sell any more than they entered at first. But if by any Means he discovers that a greater Quantity is sold than was entered, he must charge it, whether strong or small, and acquaint the Collector or Supervisor therewith, that the Offenders may be prosecuted as the Law directs.

May be admitted to make *Post Entries*.

Must enter all these Things in the Collector's By-Drink Book.

Note. All these Particulars, upon the Collection-Day, the Officer must enter into the Collector's Book for *By-Drink*, and sign his Name thereto, and pay the Money he has received for such *By-Drinks* to the Collector.

None must be returned as By-Brewers, but such as sell Drink on accidental Occasions.

The Officer must not offer to return any as *By-Brewers*, but such as sell only at Fairs, and on other accidental Occasions; nor must he keep any Person as a *By-Brewer*, who continues to brew Drink for Sale above two Rounds together, at his Peril. The Officer must not receive the Duty due from any Person whatsoever, except for *By-Drinks* only, nor bring any Person's Money to the Collection, nor take up any Arrears between the Rounds, without Directions first had in Writing, signed by the Collector, at his Peril.

Must not receive any Money but for By-Drinks, &c.

Officers must not keep any Public House, nor accept any Treat, &c.

The Officer must not keep a Public House, nor deal in any Commodities, nor must he trade with nor borrow any Money of nor accept any Treat, Fee, or Reward from any Person chargeable with any Duty under his Survey, or from any one

employed by them. Nor must he survey his Relations, or Securities, at his Peril.

The Officer, when he first comes into a Division, must enter his Name in the Front of each Survey-Book, the Time when he received it, and the two first Letters of his Name to the *first* Surveys and Gauges he takes throughout the said Books: But if he officiates in another Officer's Division on any Occasion, in that Case he must set the two *first* Letters of his Name to his *first* and *last* Surveys and Gauges in each Book, also his Name in the Front, with the Time that he officiated in that Division.

The Officer when he is removed from one Division to another, which he must never solicit for or against, by any other Method than his own Letter to the Board; he must mention in the Fronts of the Book of that Division he leaves, the Time he left the same, and he must put his Name thereto, and must leave the Acts of Parliament, Instructions, Books of Permits and Certificates, general Letters, and whatever Books and Papers belong to that Division, taking a Receipt for the same from the Supervisor, or the succeeding Officer, who received them from him. *Note*, in Case any Commissioner upon a Survey shall give him any Directions in Writing, which may respect that Division or Place where such Directions shall be given, he must immediately enter the same at the End of his printed Instructions, that both the Supervisor and his Successor may observe the same as well as he himself has done.

The Officer when he is directed by Order of the Board, to qualify and instruct any Person for a Gauger's Employment, he must not offer to certify him qualified for such Employment before he can cast up Malt, and excise Gauges by the Sliding Rule; and he must not suffer such Pupil to survey or take any Gauge for him, nor must he take any Gauge or Surveys from his Pupil's Book, nor permit him to transcribe any from his; but at all Times, while instructing, he is to be kept as punctually to his Surveys, &c. as if he were then actually an Officer; and for his instructing such Person, he shall not receive from him more than 20s. when he comes to be instructed, and 20s. more when he is certified for and instructed.

As different as the Business of a common Brewer is from that of a Victualler, who retails what he brews; so different is the Business and Duty of an Officer who surveys him: The Officer then that has the Care of common Brewers is to survey those where he resides twice a Day, though they are silent, if his other Business will permit him so to do, and once at least every Sunday when they are at work; he must make frequent Returns to the Brew-Houses, and at uncertain Times, and at each Return he must take a Gauge of every Guile that is depending, and of what Worts are off of the new Guile, though no more be off than when he was last there, always endeavouring to take a Gauge of each Wort, so soon as it is possible, after it comes out

The Duty of the Officer when he first comes into a Division, or when he officiates for another.

The Officer must never solicit for a Remove but by his own Letter.

Must take a Receipt for the Stores.

Of Instructions given by a Commissioner on his Survey.

The Officer's Duty, who has the Instruction of Pupils.

Pupils must not survey or take Gauges for the Officer, nor the Officer take Gauges, &c. from the Pupil's Book. Officer's Fee is 40s.

Great Difference between the Business of those Officers who gauge Victuallers, and those who survey common Brewers. The Officer's daily Duty where he resides. Must make uncertain Returns upon them when at work.

Must take a Gauge as soon as it comes out of the Copper, and also a cold Gauge. When a Wort is in the Copper, of which he has not had a Gauge. Tho' not separated from the Hop. His Charge, if he apprehends Wort has been privately removed. Officer must enter the Condition of the Under-Back. When a Fraud is to be suspected.

of the Copper, and a cold and confirming Gauge as well as a warm one on each separate Wort; and where there is a Wort in the Copper of which he has not had a Gauge, he must return, though it be in the Night, at such Times as he may get the best Gauge thereof; but in Case the said Wort hath done boiling, and is not separated from the Hops, either in the Copper or Hop-Back, he must take the true Gauge thereof, and write (*hot*) over it, but not make any Charge therefrom; unless from his following Gauges he hath good Reason to believe that some Part of the said Wort hath been privately conveyed away; and in such Case he must charge from his Gauge, making such Allowance only as he thinks reasonable on account of Heat and Hops. The Revenue may be greatly injured by a Fraud that has frequently been committed by leaving Part of a Wort in the Under-Back; the Officer therefore must frequently examine the same, especially when the last Wort is in the Copper, and enter the Condition thereof in his Book; and where he finds an Hop-Liquor left in the Copper, he must observe carefully how the same is disposed of, that no Fraud be covered thereby, as has been frequently practised.

The dipping Places must be marked.

The Gauges of two Backs must not be taken by only dipping in one.

The Backs to be examined, to see if any Alteration is made therein. The Characters used to distinguish the different Sorts of Worts.

If 2 Worts.

If 3 Worts.

If 4 Worts.

Strong Worts.

If small Wort.

If 3 small Worts.

If warm Gauge.

If Wort to be returned.

The Officer must observe to keep the dipping Places of the Vessels and Utensils, with the Additions and Abatements, if there be any, fairly marked on them; nor must he take the Gauges of two Backs by dipping only in one of them, unless the Communication be so wide, as not to be stopped without being discovered; he must frequently examine the Position of the Backs*, to see if any Alteration hath been made since they were last set, which is to be done by taking Dips in several Places, or seeing the Worts in them let down into a Tun.

The Officer must make himself Master of the several Characters used to denote the different Worts, which are as follow: In entire Guiles of *strong*, or in *party* Guiles, as the Worts come off, you must Character them in the following manner: If but two Worts, the first *b*, the second *bl*. If three, the first *b*, the second *m*, the third *bl*. If four, the first *b*, the second *m*, the third *n*, and the fourth *bl*. and this Character \times must be used for all Worts of the Quality of *Strong* that are down in the Tun, though the Length be not declared, the same Character must be used for all Worts declared *Strong*, whether they be in the Backs or Tuns; and this Character VI. for all small Worts when they are declared so. But in *entire* Guiles of *small*, the first Wort must be character'd *vi*, the second *vi*, the third *vi*. &c. W. signifies the Gauge was taken when the Wort was warm, and R, that it is intended to be returned on the Goods of a succeeding Brewing †.

* Is what great Brewers cool their Worts in, and those are frequently placed one under another.

† When two or more strong Worts, the first Wort (or Hop) must be marked with *b*; the second Wort (or Mash) with *m*; the third Wort (or Neighbour) with *n*; and when the whole Brewing is intended for \times (or strong) the last Wort (or blue) must be marked *bl*. There are like-

The Officer as soon as he can, after all the Worts of any Guile are off, must demand of the Brewer or his Servant, how much *strong* Beer or Ale, and also how much *small* the Brewer intends to make of such Guile, and insert the Answer he receives in his Book, with the Person's Name that gave the same. And if any Part of a Guile be cleansed before the Brewer, or his Servant has made such Declaration as aforesaid, (he having been required by him so to do) the Officer is to charge the whole Guile strong; or if after the Length * has been declared, he find any Increase of strong contrary to Law, or any Part of the Guile laid off over and above the Length declared, he must acquaint the Collector and Supervisor therewith the first Opportunity; and if the Guile be declared all *small* when the Worts are separate, and some of them above the Quality of small, he must acquaint the Person, who declares that the Worts then above the Quality of small will be charged strong, which probably will prevent his making any Declaration till the Worts are all down and mixt in the Tun; but in case he insists on that Declaration, the Officer must enter the same in his Book, remarking so much of that Guile strong as appears to him to be above the Quality of small at that time; and he must charge it accordingly, if he has not an Opportunity of seeing the Worts mixt, or of taking a Gauge of them after mixt; and if when the Length is declared there be *Finings*, which cannot be gauged, he must require the Brewer to declare the Quantity of *Finings*, and he must accordingly enter them in his Book.

In making up the Charge of each Guile, when a Brewer in a Party Guile makes one or more Worts strong, and does not use any of his small Wort to make up the Quantity of strong intended; and upon the Declaration of his Length, the Officer has no reason to believe from the Gauges he has taken, that any of the small Wort or Worts are missing, or that any of the strong Wort or Worts are or have been mixed with the small; in this case, the Officer must collect the best Gauge of each strong Wort, and the best Gauge of each small Wort, and make his Charge of strong and small from the separate Totals of them, or from any better Gauge that he afterwards takes of the strong or small, when Part thereof is up and Part down, or when all is down in the Tuns. But when a Brewer makes up his Length of strong, by Part of the Wort or Worts intended for small, or *contra*, the Officer must collect the best Gauge of each Wort, and add them together, and from that Total if it be most, or from any mixed Gauge of two or more Worts together, or from any Gauge, that makes a better Total, deduct the small declared, and

likewise some other Characters frequently to be met with in the Officers Books, *i. e.* L. for Liguor, (that is Water;) W. for Wort; *pw.* for a piece (or Part) of a Wort; T. Sp. dg. for Tap-spending or the Wort running from the Mash-Tun; vi. r for small Beer, raw, or unboiled; O denotes the Goods to be gone; X X for Stout, or Beer that is above the common Quality.

* Is the Quantity of Gallons or Barrels brewed at a Time.

and charge the Remainder strong ; but if the strong declared, or any subsequent Gauge thereof *exceed* such Remainder, charge from that ; or if there be any subsequent Gauge of the small *better* than when the Length was declared, that is to be the Charge.

If the Brewer brews in little Quantities, and seldom.

A Gauge must be got as soon as the Wort is out of the Copper. Of seizing exciseable imported Liquors.

Any Officer intermidding in Elections, forfeits 100*l*.

There are several common Brewers who brew but seldom, and little Quantities at a Time ; I say, where this happens, and the Officers have much other Business, the Collector and Supervisor may give them Leave to survey such Brewers but once a Day, when silent, and not so often on brewing Days as they are enjoined to survey great common Brewers ; yet they must take Care to get a Gauge of each Wort as soon as possible, after it comes out of the Copper.

N. B. When the Officer seizes (see Page 236) any exciseable imported Liquors or other Goods, he must acquaint the Board therewith the next Post, that Directions may be given touching the Condemnation of them.

⚡ No Officer of the Excise must endeavour to persuade any Elector to give, or dissuade any one from giving his Vote, for the Choice of any Person to be a Member of Parliament ; for such Officers as do so intermeddle with Elections, not only forfeits the Sum of 100*l*. but are also by Act of Parliament render'd incapable of any Employment in the Excise, or any Office of Trust under his Majesty whatsoever.

CHAP. IV.

Shewing the Rise and Progress of the Excise on Beer and Ale, &c.

IN the Year 1660, the Commons, to make his Majesty King *Charles II.* grateful Returns for his Grace and Favour, granted him from *Christmas*, 1660, during his Life *, certain Rates of Excise, upon Beer, Ale, Cyder, Perry, Metheglin or Mead, Vinegar-Beer, Strong-Water, Aqua Vitæ, Beer and Cyder imported, Spirits made from Wine or Cyder imported ; and Strong Water perfectly made and imported ; and obliged all common Brewers to make Entries weekly, and other Retailers of Beer, Ale, Cyder, Perry, Metheglin, or Strong Waters, *brewing, making, or retailing the same*, to make Entry monthly, of all the Beer, Ale, Cyder, Perry, Metheglin, Strong Waters, or other the Liquors *aforsaid*, brewed or made in that Week or Month, under the following Forfeitures, *viz.* The common Brewer, 5*l*. the Inn-keeper, 5*l*. and the Victualler or other Retailer 20*l*. † who are obliged to pay and clear off the Duty within

* The like Duties have been granted to all the succeeding Kings and Queens.

† These Penalties for not making due Entries have, by a subsequent Law, received the following Additions ; the common Brewer 10*l*. the Inn-keeper 5*l*. the Victualler or other Retailer 20*l*.

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within the *Week* or *Month* after such Entries are made, or to pay double the Value of the Duty. BUT none of the said Traders are obliged to go out of a Market-Town, nor further than the next Market-Town (on the Market-Day) to the Place where he lives, in the same County, to make such Entries. AND the Commissioners are empowered to appoint Gaugers*, who by Day or Night (but if by Night, then in the Presence of a Constable†) may enter any House, Brew-house, Distill-house, and all other Places used by any Brewer, Inn-keeper, Victualler, or other Retailer of Beer, brewing or making the same; or by any Distiller of Strong Waters, or Retailer of *other the Liquors aforesaid*, to gauge all their Vessels, and to take an Account of their respective Liquors, who shall make Returns thereof in writing to the Commissioners, and leave a Copy of such Return with the respective Traders: And if any such common Brewer, or Retailer, shall not permit the Gauger to enter his Brew-house, or any other Place afore-mentioned, to gauge his Vessels, or take an Account of any such Beer, Ale, Worts, Cyder, Perry, Strong-Water, Aqua Vitæ, Metheglin, or *other the Liquors aforesaid*, the Gauger may forbid such Brewer, Retailer, or Distiller, to sell any Beer, Ale, or *other the Liquors aforesaid*; and if any Brewer, Retailer, or Distiller shall sell, carry, or deliver out the same, or any Part thereof, after such Warning, (not having paid and cleared the Duty of Excise) they forfeit double the Value of the Goods, and also 5*l.* ‡ to be levied upon his Goods, as is hereafter directed. AND it is declared, for the avoiding all Disputes, That 36 Gallons shall be returned for a Barrel of Beer, and 32 Gallons for a Barrel of *Ale*, within the Limits of the Bills of Mortality ||. And to encourage the common Brewers to make due Entry, and Payment, they are to be allowed for Waste by Fillings and Leakage (if within the Limits of the Bills of Mortality) 3 Barrels upon every 23 Barrels of strong or small Beer, and 2 Barrels upon every 22 Barrels of *Ales*. But if the common Brewer shall be convicted of wilfully making a false Entry, he shall forfeit his said Allowance for *six* Months next ensuing, besides the 5*l.*** before-mentioned; nor shall any such Brewer deliver any Beer or Ale to the Retailer, before the Excise for it is paid. BUT if the Duty of Excise be paid before Sale, no Person selling Ale and Beer in Fairs (being not a usual Brewer or Retailer) shall be subject to the above Penalties. THE Commissioners and Sub-Commissioners may compound for this Duty with any Inn-keeper, Victualler, Ale-house keeper, or Retailer of Beer, Ale, and *other the Liquors aforesaid*, in such manner as may be most for the Improvement of the Revenue. ALL the aforesaid Forfeitures and Offences are to be heard and determined as follows, *viz.* All Forfeitures made, and

* No Person is capable of acting in the Excise till he has first taken the Oaths on Page 225, appointed instead of the Oaths of *Allegiance and Supremacy*; and the *Oath of Office*, before *two or more* Justices of the Peace in the County where his Employment shall be, or before one of the Barons of the Exchequer; and every Justice is to certify the taking of such Oaths to the next Quarter-Sessions.

† If any Constable, or other Ministerial Officer of the Peace, upon due Request made by any Officer of the Excise, to go along with him, and be present where their Presence is declared necessary by Law, and such Officer shall not go and be present he shall forfeit 20*l.* for every Offence. See 11 *Geo. I. Cap. 30.*

‡ This Penalty for selling after Warning, has since received an Addition of 10*l.*

|| 34 Gallons is a Barrel of Beer and Ale elsewhere. See Page 255.

§ Two Barrels and an *Half* upon every 23 Barrels is allowed for *Waste* elsewhere. See Page 255.

** To this 5*l.* Five Pounds more has been added: But these several farther Forfeitures and Penalties are directed to be recovered and applied as above directed.

Offences committed, within the immediate Limits of the chief Office in London, (*i. e.* within the Bills of Mortality*) are to be determined by the Commissioners, or the Major Part of them, or by the Commissioners of Appeals, in case of Appeal, and not otherwise. AND all Forfeitures and Offences committed *elsewhere*, are to be determined by *two* Justices of the Peace residing near the Place (in the same County) where such Forfeitures are made, or Offence committed: But in Case the Justices shall refuse or neglect to act therein for 14 Days after Complaint, the Sub-Commissioners may then hear and determine the same: From whose Determination the Party if he finds himself aggrieved, may appeal to the next Quarter Sessions, whose Determination shall be final. AND the Commissioners, Justices of the Peace, and Sub-Commissioners (having Jurisdiction) are required, upon Complaint or Information†, to summons‡ the Offender, and on his Appearance or Contempt, to examine the Matter upon Oath, and to give Judgment; and by Warrant to levy the Forfeitures upon the Offender's Goods, and to sell them, if they are not redeemed within 14 Days; and they may, for want of sufficient Distress, imprison § the Offender till Satisfaction is made. BUT the said Commissioners and Justices, or any two of them, may mitigate the Fines and Forfeitures, so that such Mitigation be not less than double the Value of the Duty, besides the reasonable Costs and Charges of the Officer or others. *Note*, That all Forfeitures and Penalties, after the necessary Charges for the Recovery thereof are deducted, shall be employed *three Fourths* to the King, and *one Fourth* to the Informer. And if any Person is sued for prosecuting any Offender, he may plead the General Issue, and give the Matter in Evidence for his Defence: And if a Verdict shall pass for the Defendant, or the Plaintiff be nonsuited, the Defendant shall have double Costs, and no *Certiorari* allowed to supersede such Proceedings of the Justices||.

TO supply certain Defects in the Laws then in being relating to the Excise, in the Year 1663 it was ordain'd, That no common Brewer, Inn-keeper, Victualler, or other Retailer, after *the first* of September 1663, should erect or alter any brewing Vessels, and make use of them for brewing Beer, Ale, or Worts, without first giving Notice at the next Office of Excise, nor make use of any private Storehouse, Cellar, or other Place, for the laying of Beer, Ale, or Worts in Cask, upon Pain of forfeiting 50*l.* for every Tun, Fat, Back, Copper or Cooler so set up and made use of: The Person likewise, in whose Occupation the House or Place

* This is extended to the Parish of *St. Mary le Bon*, Middlesex. See Page 310.

† In what Time Informations must be laid. See Page 256.

‡ What shall be a good Summons. See Page 255.

§ The first Warrant must be return'd, that there is not sufficient Distress to be found, before a Warrant to take the Body must issue.

|| But Proceedings may be superseded by a *Certiorari*, if either the Justices or Commissioners proceed in any Matter not within their Jurisdiction: as, if the Justices grant Warrants to the Collectors, requiring them to repay the Duty in Cases not relievable by Law, the Collectors may refuse to obey such Warrants; and if the Special Matter appears sufficiently upon the Face of such Warrants, it will be proper to remove the Proceedings into the King's Bench. And if a Trader appeals, after the Judgment of two Justices, to the Quarter Sessions, a *Certiorari* may be brought to take the Opinion of the King's Bench, whether the Quarter Sessions have any Jurisdiction or not; and if the Court be of Opinion that they have no Jurisdiction, (which they really have not, except by the Acts laying the Duties on Hides and Malt) any Order by the Sessions of Reversal of the Justices Judgment ought to be quashed. And if the Commissioners or Justices intermeddle with any thing out of their Jurisdiction, then all is *Coram non Judge*, and may be given in Evidence. See *Carthew's Reports* 346.

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Place is where such private Tun, Back, Cooler, or Storehouse shall be found, shall forfeit 50*l.* and the concealed Vessels so discovered or alter'd, with the Drink found therein, may be seized and delivered to the Overseers of the Poor, to be sold for the Use of the Poor. ALL Gaugers, under the Forfeiture of 40*s.* for every Refusal or Neglect, must deliver to the common Brewer weekly, a Copy under his Hand of the Return he has made to the Commissioners. And no Brewer shall be prosecuted for any short or Mis-Entry*, if, within a Week after he receives such Copy, he shall rectify his Entry according to the Officer's Return, or otherwise discharge himself. AND the Contents of all Brewers Tuns, Coppers, Fats, Backs, Coolers, &c. are to be justly computed by two able Artists, one to be appointed by the Commissioners or Sub-Commissioners, and the other by the Brewer, who are to be sworn before a Justice, to compute the just Contents, and shall deliver a Copy of the particular Contents of all such Vessels to each Party under their Hands. AN Office of Excise shall be kept in every Market-Town on every Market-Day, and a Person shall be deputed to attend it, to receive Entries, and for the performing all other Matters and Things touching the Excise. Which Office shall be kept open from 9 to 12 in the Morning, and from 2 till 5 in the Afternoon†: And if the Person appointed neglects to attend it every Market-Day, shall forfeit 10*l.* for every Refusal or Neglect, viz. 5*l.* to the King, and 5*l.* to the Informer. And any Person who can produce a Witness to prove upon Oath a Tender of his Entry or Payment on such Market-Day, shall be exempt from the Penalties incurred for such Entry or Payment not having been made, or paid on such Market-Day. IT is further directed, That, without giving Notice to the Officer, no common Brewer shall sell, deliver, or carry out any Drink to his Customers in Cities, Towns Corporate, or Market-Towns, from the 25th of *March* to the 29th of *September*, but betwixt the Hours of 3 in the Morning and 9 at Night; nor from the 29th of *September* to the 25th of *March*, but betwixt the Hours of 5 in the Morning and 7 at Night, under the Pain of forfeiting 20*s.* for every Barrel, which Penalty is to be recovered as hereafter is directed. AND if any common Brewer, Inn-keeper, Victualler, or other Retailer, after the first of *Sept.* 1663, shall convert any small Beer or small Worts into strong by Mixture, after the Gauge has been taken, without giving Notice to the Gauger of the Quantity he has so mixed; or if any Brewer or Retailer shall conceal, hide or convey away any Drink or Worts not gauged from the Sight of the Gauger, he shall forfeit 20*s.* for every Barrel so mingled, converted, or conveyed away, to be recovered as hereafter is appointed. AND it is likewise declared, That all the Brewing Vessels, and Utensils for Brewing, shall be liable to all the Debts and Duties of Excise in Arrear, (into whose Hands soever they shall come, and by what title soever they shall be claimed) and likewise to all Penalties and Forfeitures incurred by any Person using such Brew-house, as if the Offender was the real Owner of the same. AND it is directed, that no common Brewer, or Compounder, do brew for any other Brewer or Retailer, without first giving Notice to the Officer of the Quantity or Quality of the Drink he intends so to brew, and paying down the full Excise for all such

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Beer

* See this *Proviso* qualified on Page 256.

† The Head Office of Excise to be erected in *London*, or within ten Miles of it, to which all other Offices shall be accountable; and the said Head Office was at first to be kept open from 8 in the Morning till 12 at Noon; and from 2 till 5 in the Afternoon. See this farther altered on Page 263.

Beer or Ale, upon Pain of forfeiting 5*l.* for every Barrel by the Brewer, as well as by the Person whose Use the Drink was brewed for: one Half to the King, and the other Half to the Informer, to be recovered in any Court of Record. IT is likewise declared, That if any Brewer or other Person shall bribe or corrupt, or give any Money, Fee, or other Reward whatsoever, to any Gauger, or other Officer, to make a false Return of any Beer, Ale, or other exciseable Liquors, or to omit his Duty, shall forfeit 10*l.** for every Offence. And every sworn Officer so offending, shall forfeit 10*l.* for every Offence; which Offences must be proved by the Oaths of *two* lawful and creditable Witnesses, before *two* Justices of the Peace, or the chief Magistrate of the Place, who are fully authorized to determine the same, and by a Warrant under their Hands and Seals are to cause the Penalty to be levied by Distress; and they may commit the Offender to Prison for *three* Months, without Bail or Mainprize, for want of sufficient Distress. IT is likewise declared, that in any Matter of Excise, no Appeal whatever shall be admitted, till the *single* Duty is deposited in the Commissioners Hands, and Security given to answer such Fine as shall be given against the Appellant on the Re-hearing: And if upon the Appeal the original Judgment shall be reversed, the *single* Duty is to be restored, and the Person prosecuting to pay *double* Costs; but if upon the Appeal the Judgment is affirmed, the Appellant is to pay *double* Costs to the Commissioners complain'd of: And all Differences, Appeals, and Complaints touching the Payment of Excise, must be determined in the proper County, or in the several Ridings and Divisions of *Yorkshire* and *Lincolnshire*, where they shall arise, and not elsewhere. ALL Colleges and Halls in the Universities, which before the Duty of Excise was imposed, did brew their own Beer and Ale within their own Precincts, and size it out to their own Members only, are not liable to the Duty of Excise. AND it is likewise declared, That any Commissioner, or other Officer of Excise, taking any Fees for Bonds or Receipts relating to the Excise, shall forfeit 10*s.* for every such Offence; and the Justices of the Peace in their respective Divisions, are enjoined to meet once a Month to determine all Matters relating to the Excise. AND it is directed, That all the Penalties and Forfeitures, not before applied, shall be disposed of as follows, viz. *one Third* to the King, *one Third* to the Poor of the Parish where the Offence shall be committed, and the *other Third* to the Informer; and all Fines, Penalties, and Forfeitures, for the Recovery whereof no Remedy is hereby appointed, shall be recovered in any Court of Record within the County, City, or Corporation where the Offence shall be committed, or by such other Ways and Means as has been heretofore appointed. AND all Appeals within the Limits of the Excise Office in *London*, must be brought within *two Months* after Judgment is given; and all Appeals in any other Counties, must be brought within *four Months* after the first Judgment, and Notice of such Appeal must be given or left at the Dwelling-House of the Party concerned. And it is declared, That any Commissioner or Officer intermeddling in the Excise, till he has entered his Certificate for taking the Oaths on *Page 215*, &c. shall forfeit 50*l.* for every Month he neglects to take the same.

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* By an Act 11 Geo. I. any Person liable to any Duty of Excise attempting to bribe an Officer, forfeits 50*l.* See also an Act of the 9 Geo. II.

IN the same Year, it was declared, That if a Summons is left at the House of a Defendant, or at his usual Place of Residence with his Wife, Child, or menial Servant, the same shall be deemed as good and sufficient, as if the Summons had been delivered into the Defendant's own Hands.

1663.

FOR the preventing of Frauds frequently practised in relation to the Duties of Excise, which ought to be paid for Beer or Ale; in the Year 1670 it was ordained, That if any Person inhabiting in any Market-Town, or in any City, or Town Corporate, or Parts adjoined thereunto, (where there is or shall be a common Brew-house) having any private Brewing Vessels for the brewing Beer or Ale, to be spent in his private Family, shall suffer any Drink to be brewed therein, other than for his own Family, Servants, Labourers, or by Way of Charity or Hospitality, shall forfeit 50l. for every such Offence, to be recovered in any Court of Record. But such Suit must be commenced within six Months after the Offence, and be tried within the County where it was committed; and one half of such Forfeiture to go to the King, and the other half to the Informer that shall sue for the same. AND for the preventing Frauds by brewing Ale, Beer, or Worts of an extraordinary Strength, and mixing the same with small Beer, Ale or Worts, after they have been gauged, it was ordained, that no Retailer, after receiving it from the common Brewer, shall mix any Beer, Ale, or Worts of extraordinary Strength, with any small Beer, Ale, or Worts, in any Vessel or Tub containing three Gallons or more, on Forfeiture of double the Strong Beer or Ale Duty, for every Barrel so mixed, and so proportionally for a greater Quantity, which Offences are to be heard and determined before the Justices of the Peace, and Commissioners, as in other Cases of the Excise, and the Forfeiture to be recovered and applied accordingly. And the Commissioners and Justices are empowered to summon Evidence for Discovery of Offences, other than the Party or Parties accused, who upon Refusal or Neglect to give Evidence when required, shall forfeit any Sum of Money not exceeding forty Shillings * for every such Offence, to be recovered and applied as other Penalties against the Excise Laws. And no Writ of *Certiorari* shall supersede Execution upon any Orders of the Justices.

1670.

FOR the avoiding of all disputes, it was ordained in the Year 1688, That 34 Gallons shall be deemed a Barrel of Beer, or Ale, whether strong or small, OUT OF the Cities of *London* and *Westminster*, and Bills of Mortality; and that OUT OF *London* and *Westminster*, and the Bills of Mortality, the common Brewer shall be allowed for Waste by Filling and Leakage, two Barrels and an half of Beer and Ale upon every twenty-three Barrels, whether strong or small: But the Contents of the Barrel of Beer or Ale, and the Allowances for Waste by Filling and Leakage, within the Cities of *London* and *Westminster*, and the Bills of Mortality, to remain the same as it was heretofore settled. AND since all Gaugers have Power to gauge all Coppers and Vessels belonging to, or used by any Brewer, Inn-keeper, Victualler, or other Retailer, and to take an Account of all Beer, Ale, and Worts by them brewed or made, and to make a Return to the Commissioners in Writing, and such Returns to be a Charge upon such Brewers: Now for preventing of Frauds and Disputes which may arise, The Gaugers are hereby authorized when any Worts are missing, and not fairly let down into the Tun, and cannot be found, to make a Charge of so much Beer

1688.

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* Altered to 10l. See Page 247.

or

or Ale, as such Worts so missed would reasonably make; and for the avoiding as much as may be of all Disputes, the Gaugers are empowered to make the Charges from their Gauges of the warm Worts in the Backs, Coolers, or other Vessels, allowing the Trader *one Tenth* for Wash and Waste; which Worts, nor any Part thereof, are not to be afterwards charged with the Payment of any Duty when brewed into Beer or Ale. IT is likewise declared, That no Brewer shall claim or have any Benefit by the Proviso* made in the Year 1663, touching any Mis-Entry, or short Entry, and rectifying the same after the Delivery of the Copy of the Gauger's Return, unless it shall appear that such Brewers shewed the Gaugers all the Beer, Ale, and Worts of every Guile brewed by him in the Time for which such Copy of the Return was made or given, but shall incur all the Penalties formerly imposed. AND for the avoiding some Doubts which have arisen, it is declared, that every common Brewer, Inn-keeper, Victualler, or Retailer, who shall make use of any private Storehouse, Cellar, or Place, shall forfeit 5*ol.* for every such Offence. And every such Brewer, Inn-keeper, Victualler or Retailer, who, contrary to what was ordained in the Year 1663, shall mix, conceal, or convey away any Worts, shall forfeit 20*s.* for every Barrel. And the Authority and Power formerly given to the Commissioners of the Excise, and Justices of the Peace, and others to hear and determine Forfeitures and Offences in relation to the Excise, is continued for their hearing and determining these Offences. AND to the End that common Brewers, and others paying Excise, may not be over-charged, the Gauger is obliged to leave with all Brewers, Makers, or Retailers of Beer and Ale respectively, or some of their Servants, at the Time of their taking the said Gauges, true Notes † in writing of their *last* Gauges, setting forth the Quantity and Quality of the Liquors so gauged, upon Pain of forfeiting 40*s.* for every Neglect ‡. All Complaints of any Over-charge returned upon any Brewers, Makers or Retailers, shall be heard and determined by the Commissioners of Excise, or Appeals, or Justices of the Peace in whose respective Jurisdiction such Brewers, Makers, or Retailers dwell or inhabit. AND there being but one Market-Town in the County of *Anglesey*, it was ordain'd, That for the Ease of the Inhabitants, there should be Offices kept for the making Entries and Payments in the Towns of *Holyhead, Newborough, Llanorchemeth*, as well as in the Towns of *Beaumaris*, where only the said Office has been accustomed to be kept. SEVERAL Collectors, Gaugers, &c. having been forced to pay Money to the Commissioners, their Registers, or Clerks, under Pretence that it was for writing, signing, and sealing Instructions or Orders, for Remedy of which it was ordained, That no Commissioner, or other Person employed in the Excise, shall demand, take, or receive any Money, or other Reward whatsoever, from any Person other than their Majesties, upon Pain of forfeiting his Office, upon Proof made by *two* or *more* credible Witnesses before any *two* of their Majesties Justices of the Peace, and being render'd incapable of executing any Office in the Excise for the future. IT was declared, That no Informations be prosecuted against any common Brewer, or Ale-house Keeper, unless they were laid within *three* Months after the Offence committed; and the Person inform'd against must have Notice given him in writing, or left at his Dwelling-house within one Week after such Information is laid, that he may have Time to make

* See this Proviso on Page 253.

† Or Copy.

‡ See this farther explain'd and enforced on Pages 257 and 258.

make his Defence. AND if, after the first of September 1689, any common Brewer, or Retailer of Beer or Ale, shall use in the brewing or working of any Beer or Ale, any Melasses, coarse Sugar, Honey, or Composition, or Extract of Sugar, he shall forfeit all such Liquor wherein any Melasses or coarse Sugar, Honey, or such Composition, or Extract shall be put, and also the Sum of 100*l*.^{*} one half to the King, and the other Half to the Informer, to be recovered in any Court of Record, provided that such Suit be commenced within *six Months* after the Forfeiture is incurred.

IN the Year 1696, for preventing the Frauds and Abuses of Brewers, and others chargeable with the Duties of Excise, it was ordained, That if any Brewer, Inn-keeper or Victualler, after the 25th of March 1696, shall cleanse, carry out, remove, or convey out of his Brew-house, or Place of Brewing, any Part of his Guile before the whole is brewed off, without first giving Notice to the Officer when and how much of such Guile he intends to cleanse and carry out, or remove, he shall forfeit 4*0s* for every Barrel so cleansed, carried out, or removed without such Notice given†. And the Gauger or other Officer is empowered to enter and stay in the House, Brew-house, Store-houses, or other Places belonging to such Brewer, Inn-keeper or Victualler, to see the whole Guile cleansed and carried out; and if any Brewer, Inn-keeper, or Victualler, refuse to permit the Gauger to enter either by Day or Night, (but if it be in the Night, it must be in the Presence of a Constable) and to stay in his Brew-house, or Place of Brewing, and take an Account of the several Worts as they are brewed off, and to see the strong and small Drink carried out without Mixture, and to gauge the Goods in the Mash Tun, he shall forfeit 20*l*. without the Informer or Prosecutor's being obliged to prove that the Brewer, Inn-keeper, or Victualler did carry out any Part of such Guile before the Duty was paid for the same. And for preventing Frauds by Mixtures or otherwise, it is ordained, That if any common Brewer, or Inn-keeper shall, upon carrying out his Drink, or after the same is carried out, mix any small Beer, or small Worts, with strong Beer or Ale, either upon his Dray, or in the Victualler's Cellar, or other Place, he shall forfeit 5*l*. for every Offence. And it is lawful for the Gauger to taste the Drink upon any Brewer's Dray, whensoever he shall find and meet the same; and also, on request, to enter the Cellars, or other Rooms of any Inn-keeper, or Victualler that takes Drink from any common Brewer, and taste the same; and if any such Inn-keeper or Victualler shall refuse to let the Gauger enter the Cellar or other Rooms, or to taste the Drink, he shall forfeit 5*l*. for every Offence. And the Commissioners of Excise, and the Justices of Peace, are empowered to summon any Person or Persons (other than the Party accused) to give Evidence; and if the Person so summoned neglect or refuse to appear, or if upon Appearance, shall refuse to give Evidence when required, he shall forfeit 10*l*.† to be levied and disposed of as hereafter is directed. GAUGERS were required, by a Law made in the Year 1694§, to leave with all Brewers, Makers, or Retailers of Beer, Ale, or other exciseable Liquors, or some of their Servants, at the Time of their taking their Gaugers, true Notes|| in writing of their last Gauges, containing the Quantity and Quality of the Liquor so gauged, on Pain of forfeiting

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40*s*.

* See this Abuse further provided against on Page 260. See also Page 262.

† See this revoked on Page 259.

‡ See Page 255. § See Pages 256 and 258.

|| Or Copy.

40s. for every Neglect: And whereas it has since been found necessary, that several Gauges should be taken by one or more Officers of every Wort of the same Brewing, and that therefore such Notes cannot sufficiently inform such Brewer or Retailer how much he is charged, it was ordained, That after the 25th of March 1696, every Gauger, within *three Days* after the End of every Week, shall leave with the Brewer or Retailer, or their Servants, a true Copy under his Hand of each respective Charge by him made upon such Brewer or Retailer, containing the Quantity and Quality of the Liquors by him charged in that Week respectively; and if any Gauger neglects or refuses to leave such Copy, or shall charge any Brewer or Retailer more than such Copy contains, he shall forfeit 10*l.* for every such Offence or Neglect*, to any Person that shall sue for the same in any Court of Record at *Westminster*. And no Gauger who shall leave such Copy of his Charges as above directed, shall be liable to any Penalty formerly imposed for not leaving Notes of their last Gauges, at the Times of their taking such Gauges. AND for the more effectual preventing and discovering of all private Backs, Tuns, and other private and concealed Vessels, or other Receptacles; and of all Drains, Pipes, or other Conveyances to or from the same, used by any Brewer, Distiller, or other Maker, Retailer of exciseable Liquors, to defraud his Majesty of the Duties payable for the same, the Officers of the Excise are empowered, in the Day-time, and in the Presence of a Constable, or other lawful Peace Officer, who are required to be aiding and assisting therein, having a just Suspicion, and upon Request first made, and the Cause declared, to break open the Door, or any Part of such Brew-house, Distill-house, Store-house, Warehouse, or other Room in their respective Possession; and also to break up the Ground in any such House or Place, or the Ground near adjoining, to search for any such private Back, Tun, or other Vessel; or for any Pipe, or other Conveyance leading thereto; and if any private Pipe, or other Conveyance shall be found, to search after and follow the same; and in case the same shall lead into any Ground, House, or Place, in the Possession of any other Person, on like Request, and in the Presence of a Constable, he may enter the same, and may break open the Ground, or any Part of the House or Houses, if Occasion shall require, to follow such private Pipe, making good the Ground or House so broken up, or giving the Owner reasonable Satisfaction: And if any Brewer, or other Person or Persons, shall oppose any Officer in the due Execution of the Powers hereby given and granted, he shall forfeit 20*l.* AND it was directed that all the Fines, Penalties, and Forfeitures hereby imposed, should be recovered and levied as directed by any former Laws of the Excise, or in any of the Courts of Record at *Westminster*. And that one Half of every such Fine, Penalty, or Forfeitures, should be to the King, and the other Half to the Informer. AND the Commissions of all Sub-Commissioners, Collectors, Supervisors, Gaugers, or others employed in the Excise, who are, have been, or shall be duly and legally constituted, shall be in Force, notwithstanding the chief Commissioners who empowered them die, or are removed, until such Time as they are revoked or annulled by the chief Commissioners. AND, *if it be demanded*, the Gaugers, at the Time of their taking the Gauges, are to leave with all common Brewers, or their Servants, true Notes in writing of every Gauge, setting forth the Inches and Tenths of the Backs, and the Wants of the Tuns, and the Quality of the Liquors respectively, on Pain of forfeiting for every Neglect

* See the Gauger's farther Duty near the Bottom of this Page 258.

Neglect or Refusal, 40s. with Cost of Suit, to be recovered in any of the Courts of Record at *Westminster*.

FOR the more effectual preventing Frauds and Abuses committed by Brewers and others chargeable with the Duties of Excise, in the Year 1697 (after revoking the Clause relating to Party Guiles on Page 247,) it was ordained, That after the 10th of April 1697, every common Brewer, or his Servants, should declare to the Gauger how much strong Beer or Ale he intends to make of such Guile, and also how much small, if he intends to make any small, before any Part is cleansed, or removed out of his Tuns, on Pain of having the whole Guile charged strong, and of forfeiting for every Barrel of Beer or Ale contained in such Guile, the Sum of 20s. And after the Length is declared, if any Increase should be made of the strong Beer or Ale so declared, or if the Gauger should find any Part of such Guile laid off over and above the Length so declared, such Brewers should forfeit for every Barrel so increased, laid off, or found over and above the Quantity declared, the Sum of 5*l*. And every Brewer's Servant who is concerned in making such Increase, after the Length was declared, or in laying of any Beer or Ale before the Declaration, should forfeit 20s. for every Barrel so increased or laid over, or in default of Payment, suffer *three Months* Imprisonment. And no Brewer shall avoid these Penalties, by proving that such Increase was made by strong Drink left in the Brew-house of a former Guile, unless he proves upon the Oath of one or more credible Witnesses that the strong Drink so added, was added in the Sight of the Gauger: And if any old returned Drink or small Beer, shall be mixed with strong Beer or Ale remaining in the Brew-house of a former Guile, and such Mixture shall be added to a Guile of new Drink, the Officer shall charge the whole of such Drink so altered as new Drink then originally brewed, and the Brewer shall pay the Duty accordingly. GREAT Frauds having been carried on by Brewers having private Pipes and Stop-Cocks under Ground, and other private Conveyances betwixt their strong Beer Tuns and small Beer Tuns for privately mixing the small Beer with strong, to the Prejudice of the Revenue, and likewise to the fair Trader, it was ordain'd, that every common Brewer having any Pipes or Stop-Cocks under Ground, or any other private Pipes or Conveyances for Beer, Ale, or Worts, out of one brewing Vessel into another, or out of any brewing Vessel into any other Place, should take up and demolish every such Pipe, Stop-Cock, and every private Conveyance, and stop up every Hole in every Tun, Batch, or Float, before the 28th of April 1697; and if any common Brewer should hereafter keep any such Pipe, Stop-Cock, or Conveyance for the Purposes aforesaid, he should forfeit 100*l*. for every Offence; and the Gaugers and Officers of Excise are empowered, after the 28th of April 1697, in the Day Time, and in the Presence of a Constable, or other lawful Officer for the Peace, on Request first made, and Cause declared, to break up the Ground in any Common Brew-house, or the Ground near adjoining, or any Wall, Partition, or other Place, to search for any such private Pipe, or other private Conveyance; and upon finding any such Pipe, or other private Conveyance, to follow the same, and to break up the Ground, House, Wall, or other Partitions or Place, through, or into which any such Pipe or other private Conveyance shall lead, and to break up, or cut any such Pipe, or other private Conveyance, and to turn any Cock or Cocks, to try and examine whether such Pipe, or other private Conveyance, may or can convey any Beer, Ale, or Worts out of one Tun or brewing Vessel into another, or out of any

any such Tun or brewing Vessel into any other Place; but in case upon such Search no such Pipe or other private Conveyance shall be found, the Officers shall make good the Ground, Wall, or other Place so broken up, or make a reasonable Satisfaction to the Owner thereof; and if any common Brewer, or any other Person or Persons whatsoever, shall oppose, obstruct, or hinder any Gauger or Officer in the due Execution of the Powers given him, every such Brewer, or other Person, shall forfeit 50*l.* for every such Offence. BUT this Law does not restrain any common Brewer from keeping and making Use of any Pipes, Stop-Cocks, or other Conveyances above Ground, and in open View, for letting his Worts out of one public Vessel into another. THE Penalties heretofore imposed having been found insufficient for preventing of Frauds committed by common Brewers keeping private Backs, and Tuns, it was ordained, That if any common Brewer, without first giving Notice at the next Office of Excise, should set up, alter or enlarge any Brewing Vessel, or should have any private or concealed brewing Vessel, he should forfeit two Hundred Pounds for every Tun, Batch, Float, Cooler, and Copper so erected or set up, altered or enlarged, kept private or concealed, without such Notice given as aforesaid. AND if any common Brewer after the 10th of April 1697, shall deliver any Wash, Tilts, Ale, Beer, Vinegar-Beer, to any Distiller or Vinegar-maker, without first giving Notice to the Gauger in whose Division such Brewer doth or shall inhabit, what Quantity of Wash, Tilts, Ale, Beer, Vinegar-Beer he intends to deliver, and when, and to whom he intends to deliver the same, every such common Brewer shall forfeit 20*s.* for every Barrel of Wash, Tilts, Ale, Beer, Vinegar-Beer delivered without such Notice given as aforesaid.

TWO Years afterwards, viz. Anno 1699, it was declared, That notwithstanding the Laws then in Force, many common Brewers do use large Quantities of Melasses in the brewing of Ale and Beer, by which Means the Consumption of Malt is very much prevented, and the Revenue defrauded of a great Part of the Duties of such Drink, it was therefore ordained, That if any common Brewer or Retailer of Beer or Ale should after the tenth Day of May, One Thousand, Six Hundred Ninety-Nine, make use of any Melasses, coarse Sugar, Honey, or Composition or Extract of Sugar, in the brewing, or making, or working of any Beer or Ale; or if any common Brewer should receive or take into his Custody or Possession any Quantity of Melasses, coarse Sugar, Honey, or Composition or Extract of Sugar, exceeding the Weight of ten Pounds, every such Brewer and Retailer shall forfeit 100*l.* * for every such Offence respectively; and every Servant of such Brewer, and every other Person, who shall assist in using Melasses, coarse Sugar, Honey, or Extract of Sugar, in the brewing or working of such Ale and Beer, or in carrying or conveying the same into the House, Brew-house, or other Place belonging to such Brewer, shall forfeit 20*l.* for every such Offence; and in Default of Payment, shall suffer three Months Imprisonment for the same.

THE very next Year, viz. Anno 1700, it was declared, That all Inn-keepers, Ale-house Keepers, and Victuallers, ought to sell their Drink by the Ale Quart, according to the Standard thereof, kept in his Majesty's Exchequer; and that their selling Ale and Beer in uncertain Measure, less than the Standard, prevents the Consumption of malted Corn, lessens the Revenues of Excise, and is a great Wrong

* Abuses of the like Sort are further provided against on Page 262. See also Page 257.

Wrong and Prejudice to Travellers and others, and also to such of the Poor, whose Necessities oblige them to buy Ale and Beer from them: For Remedy whereof it was ordained, That after the 24th Day of *June* 1700, all Inn-keepers, Ale-house Keepers, Sutlers, Victuallers, and other Retailers, and every Person keeping any publick House, and retailing and selling Beer or Ale in any City, Town-corporate, Borough, Market-Town, Village, Hamlet, Parish, Port or Place whatsoever, shall retail, utter, and sell their Beer and Ale, in and from their Houses, by a full Ale Quart or Ale Pint, according to the said Standard, or in Proportion thereunto in Vessels sized, and made equal to the Standard, and shall not retail and utter any Beer or Ale to any Person or Persons in any Vessel, not being marked as aforesaid, on Pain to forfeit for every such Offence a Sum not exceeding forty Shillings, nor less than ten Shillings, to be recovered as hereafter is directed. AND if any Inn-keeper, Ale-house Keeper, Victualler, Suttler, or other Retailer, as aforesaid, should, after the *Nine and Twentieth Day of September* 1700, retail, or sell any Beer or Ale in any Vessel not stamped or marked, as aforesaid, to any Traveller, or other Person or Persons; or if in giving an Account or Reckoning in writing, or otherwise, any Inn-keeper, Ale-house Keeper, or other Retailer, shall refuse to give in the particular Number of Quarts or Pints of Beer or Ale, for which Demand is made in such Reckoning, it shall not be lawful, on Default of the Payment of such Reckoning, for any Inn-keeper, Ale-house Keeper, or other Retailers as aforesaid, to detain any Goods, or other Thing belonging to the Person or Persons from whom such Reckoning should be due, but he should be left to recover the same by Action at Law, notwithstanding any Custom or Usage to the contrary. AND to the Intent that the aforesaid Vessels may be from Time to Time sized and equalled to the said Standard, it was ordained, That the Sub-Commissioners or Collectors of his Majesty's Revenue of Excise, within their respective Divisions, should forthwith provide a substantial Ale-Quart and Ale-Pint of Brass, for the Mayor or chief Officer of each City, Corporation, Borough, or Market Town in his Division, in which there was not before a Brass Standard and Ale-Quart and Pint, which said Quart or Pint the Mayor or other chief Officer shall deliver to his Successor for the Purposes aforesaid; and from and after the 24th of *June* 1700, the Mayor or other chief Officer of every City, Corporation, Borough, or Market-Town, shall from Time to Time cause all Ale-Quarts and Ale-Pints, made of Wood, Earth, Glass, Horn, Leather, Pewter, or other good and wholesome Metal, that shall be brought to him to be measured, compared, sized, and equalled with such Standard Ale Quart and Ale Pint in their Custody, and should then cause them to be plainly marked with W.R.* in Capitals, and a Crown, testifying that such Quarts and Pints have been measured and adjusted with the Standard in their Custody, which Stamps or Marks, the Mayor or chief Officer is to provide; and for their stamping or marking each Measure, they shall neither demand nor receive above one Farthing; and if such Mayor or other chief Officer should neglect this his Duty, he should forfeit the Sum of Five Pounds, and should pay to the Party aggrieved treble Damages, with Costs of Suit, to be recovered in any of his Majesty's Courts of Record. AND it was ordained, That all Penalties and Forfeitures imposed hereby, should be divided one Half to the Poor of that Parish where such Forfeiture should be incurred, and the other Half to the Informer, to be recovered by the Oath of one or more credible Witnesses, made before

* This was in King *William's* Reign.

before one or more Justice or Justices of the Peace of the County or Place where such Offence is committed, and he or they are to cause the Penalty to be levied by Warrant under his or their Hands and Seals, upon the Goods and Chattels of the Offender, rendering to the Party the Overplus, after the reasonable Charges should be deducted. But if any Retailer shall sell his Drink to be spent out of his House, provided he measures it by the Standard, he is not subject to any Penalty as aforesaid, although such Drink is carried out in Vessels not marked. AND if any Justice of the Peace, or any Person or Persons employed by him in the Execution of the Premises, have any Action brought against them, it must be laid in the County where the Fact was committed, and the Defendant may plead the General Issue, and give the Matter in Evidence; and if the Defendant obtains a Verdict, or the Plaintiff is non-suited, or discontinue his Action, the Defendant shall have treble Costs; and the Justices of the Peace, at their Quarter Sessions, are to give the Matters herein contained in Charge to the Grand Juries of their Counties respectively. But nothing herein ordained, shall extend to deprive the two Universities of any Privilege and Usage, of marking and fizing the Measures for Ale and Beer within their respective Jurisdictions.

THE evil Practices in brewing Beer and Ale with Sugar, 1701. Honey, foreign Grains, *Guinea* Pepper, or with a late invented Liquor, or Syrup, made from Malt and Water, boiled up to the Consistency of Melasses, and very much resembling the same, and commonly called *Essentia Bine*, or with any other unwholesome Materials, being got to a very great Height; and to the End that no Mixture of Sugar, Honey, foreign Grains, *Guinea* Pepper, or of the said Liquor or Syrup, or other unwholesome Materials may be used in the brewing or making of Beer and Ale; in the Year 1701, it was ordained, That no common Brewer, Inn-keeper, Victualler, or other Retailer of Beer and Ale, should make use of any Sugar, Honey, foreign Grains, *Guinea* Pepper, or of the said Liquor or Syrup, called *Essentia Bine*, *Coccus Indiae*, or any other unwholesome Materials or Ingredients in the making or brewing of any Beer or Ale, under the Penalty of 20*l.* for every Offence: Nor shall any common Brewer, Inn-keeper, Victualler, or other Retailer mix * any Sugar, Honey, foreign Grains, *Guinea* Pepper, or any of the said Liquor called *Essentia Bine*, *Coccus Indiae*, or any other unwholesome Materials or Ingredients, with any Beer or Ale, under the like Penalty of forfeiting for every such Offence, the Sum of 20*l.*

IT having been found by Experience, that Hops used in the making of Malt Drinks, are more wholesome to human Bodies, and of greater Advantage to the Drink itself, than any other bitter ingredient that can be used instead thereof; in the Year 1710, it was therefore ordained, That

1710. no common Brewer, Inn-keeper, or Victualler, should use any Broom, Wormwood, or any other bitter Ingredient (to serve instead of Hops) in brewing or making any Beer or Ale to be brew'd or made for Sale, in any Part of Great Britain, on Pain of forfeiting 20*l.* for every such Offence; one Half whereof shall be to the Crown, and the other Half

* These Materials which the Reader finds printed with a different Letter, their Use was not till now prohibited; and formerly the Offence was the using of any of the other Materials in the brewing or working of any Ale or Beer; but now the very mixing of any of the Ingredients above-mentioned with any Ale and Beer, is subject to a Penalty of 20*l.* for every Offence.

Half to him or them that shall discover, inform, or sue for the same. But the infusing of Broom or Wormwood into Beer or Ale by the Retailer *after the same is brewed and tunned*, to make the same Broom or Wormwood Ale, or Broom or Wormwood Beer, is not penal.

MANY Years after this, *viz.* 1745, the Legislature, observing that by the Laws as they then stood concerning the Duties of Excise, and other Duties under the Management of the Commissioners of Excise, in that Part of *Great Britain* called *England*, all Forfeitures and Offences, made and committed within the immediate Limits of the chief Office in *London*, were to be heard and determined by the chief Commissioners and Governors of Excise; and all such Forfeitures and Offences made and committed within all or any other the Counties, Cities, Towns, or Places in *England*, were to be heard and determined by any two or more Justices of the Peace residing near to the Place where such Forfeitures should be made or Offence committed. And whereas it had been found that many Persons chargeable with duties of Excise, or other Duties under the Management of the said Commissioners, or incurring Penalties by Offences against the said Laws, did frequently avoid Prosecutions, by removing out of the Jurisdiction wherein such Duties were charged, or Offences committed, to the great Prejudice of the Revenue, and Discouragement of the fair Traders: For the preventing of which for the future, it was ordained, that from and after the 24th Day of *June* 1745, it should and might be lawful for the said Commissioners and Justices respectively, within whose Jurisdiction any Person charged with any of the said Duties, or who should have committed any Offence against the said Laws, or any of them, should be found, to summon, hear, adjudge, and determine, and issue any Process or Warrant in the same Manner as such Commissioners or Justices might now do in case of such Offences as are committed within their respective Jurisdictions: And in case the said Commissioners or Justices should, upon any Judgment given by them respectively, issue a Warrant or Warrants of Distress, and the Person or Persons authorised to execute such Warrant, or any of them, should make a Return thereto, that no sufficient Distress can be found, then it should and might be lawful for the said Commissioners and Justices respectively, within whose Jurisdiction the Party should at any Time be found, against whom such Warrant should have been issued, upon producing to them such Warrant, and Return thereof, to commit such Offender to the next County Goal, till he has made Satisfaction. AND that if any Person should be prosecuted for any thing done by Virtue or in pursuance of this or any other Ordinance relating to the Duties of Excise, or other Duties under the Management of the Commissioners of Excise, such Person might plead the General Issue; and if afterwards a Verdict should pass for the Defendant, or the Plaintiff discontinue his Action, or be non-suited, or Judgment should be given against him, upon Demurrer, or otherwise, that then such Defendant should have treble Costs awarded to him against any such Plaintiff.

ABOUT five Years after, *viz.* 1750, the Office Hours having been found inconvenient, and to be attended with extraordinary Expence to the Subject, it was ordained, that the Office Hours appointed by the Ordinance of 1663, should be repealed, and that after the tenth Day of *May* 1750, the Excise-Office should be kept open from 8 o'clock in the Morning, till 2 o'clock in the Afternoon, and no longer.

The EXPLANATION and Use of the following TABLES.

The following Tables are not only very useful to Officers in making up their Accounts against the Sittings; but also to those Traders, who are subject to their respective Duties.

TABLES I. and II. FOR VICTUALLERS.

BOTH these Tables begin with a Quarter of a Barrel, (*viz.* a Firkin,) and end with 112 Barrels.

N. B. The large Figures in the Columns titled *Bar.* signify so many Barrels; and the small Figures between them, *Quarters of Barrels.*

Example. I demand how much *Excise* a *Victualler* has to pay for $46\frac{1}{4}$ Barrels of *Ale*, and $29\frac{3}{4}$ Barrels of *Small Beer*?

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Look in Table I. for $46\frac{1}{4}$ Barrels, and against it you have	—	18	10 0
Look in Table II. for $29\frac{3}{4}$, and against it you have	—	01	19 8
And thus you find the <i>Excise</i> or <i>Duty</i> amounts to	—	20	09 8

N. B. If your Number of Barrels be more than 112, you must take it out of the Table at twice.

TABLES III. and IV. For Common Brewers in the COUNTRY.

Both these Tables begins with $\frac{1}{4}$ of a Barrel, (or Firkin,) and end with 460 Barrels.

Example. What *Excise* has a common Brewer in the Country to pay for $50\frac{1}{2}$ Barrels of *Small Beer*?

1 st , Look for 50 in the Column of Barrels, and against it you have	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>q.</i>	<i>pts.</i>
	—	2	19	5	0 4
2 ^{dly} , Look at the Beginning of the Table, in the same Column, for $\frac{1}{2}$ a Barrel, and against it you have	—	0	0	7	0 12
And thus you find that the <i>Duty</i> of $50\frac{1}{2}$ Barrels of <i>Small Beer</i> amounts to	—	3	0	0	16

N. B. If your Number of Barrels exceeds 460, you must take it out of the Table at twice.

TABLES V. VI. and VII. For Common Brewers in LONDON.

Example. What *Excise* is to be paid for 430 Barrels of *Strong Beer*, by a common Brewer in London?

430, The Number given, is not to be found in the Table; therefore take the next less Number,	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>q.</i>	<i>pts.</i>
which is—414—which comes to	144	0	0	0	0
Then take—16—which comes to	5	11	3	$\frac{1}{2}$	14

Which added, make—430—and amounts to 149 11 3 $\frac{1}{2}$ 14

N. B. The *Uses* of the Tables VI. and VII. being the very same, they need no Example.

Ch. IV. Victuallers, at 8s. per Barrel.

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Cash Tables for Victuallers for the Excise of STRONG Beer and Ale, at 8s per Barrel, calculated to a Quarter of a Barrel. Explained on Page 264.

Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.
10 2 0	11 4 8 0	3 8 14 0	2 13 00 0	1 17 6 0
20 4 0	1 1 10 0	22 8 16 0	3 13 2 0	2 17 8 0
30 6 0	2 4 12 0	1 8 18 0	33 13 4 0	3 17 10 0
10 8 0	3 1 14 0	2 9 00 0	1 13 6 0	44 17 12 0
10 10 0	12 1 16 0	3 9 2 0	2 13 8 0	1 17 14 0
20 12 0	1 4 18 0	23 9 4 0	3 13 10 0	2 17 16 0
30 14 0	2 5 00 0	1 9 6 0	34 13 12 0	3 17 18 0
20 16 0	3 5 2 0	2 9 8 0	1 13 14 0	45 18 00 0
10 18 0	13 5 4 0	3 9 10 0	2 13 16 0	1 18 2 0
21 00 0	1 5 6 0	24 9 12 0	3 13 18 0	2 18 4 0
31 2 0	2 5 8 0	1 9 14 0	35 14 00 0	3 18 6 0
31 4 0	3 5 10 0	2 9 16 0	1 14 2 0	46 18 8 0
11 6 0	14 5 12 0	3 9 18 0	2 14 4 0	1 18 10 0
21 8 0	1 5 14 0	25 10 00 0	3 14 6 0	2 18 12 0
31 10 0	2 5 16 0	1 10 2 0	36 14 8 0	3 18 14 0
41 12 0	3 5 18 0	2 10 4 0	1 14 10 0	47 18 16 0
11 14 0	15 6 00 0	3 10 6 0	2 14 12 0	1 18 18 0
21 16 0	1 5 2 0	26 10 8 0	3 14 14 0	2 19 00 0
31 18 0	2 6 4 0	1 10 10 0	37 14 16 0	3 19 2 0
52 00 0	3 6 6 0	2 10 12 0	1 14 18 0	48 19 4 0
12 2 0	16 6 8 0	3 10 14 0	2 15 00 0	1 19 6 0
22 4 0	1 6 10 0	27 10 16 0	3 15 2 0	2 19 8 0
32 6 0	2 6 12 0	1 10 18 0	38 15 4 0	3 19 10 0
62 8 0	3 6 14 0	2 11 00 0	1 15 6 0	49 19 12 0
12 10 0	1 6 16 0	3 11 2 0	2 15 8 0	1 19 14 0
22 12 0	1 6 18 0	28 11 4 0	3 15 10 0	2 19 16 0
32 14 0	2 7 00 0	1 11 6 0	39 15 12 0	3 19 18 0
72 16 0	3 7 2 0	2 11 8 0	1 15 14 0	50 20 00 0
12 18 0	18 7 4 0	3 11 10 0	2 15 16 0	1 20 2 0
23 00 0	1 7 6 0	29 11 12 0	3 15 18 0	2 20 4 0
33 2 0	2 7 8 0	1 11 14 0	40 16 00 0	3 20 6 0
83 4 0	3 7 10 0	2 11 16 0	1 16 2 0	51 20 8 0
13 6 0	19 7 12 0	3 11 18 0	2 16 4 0	1 20 10 0
23 8 0	1 7 14 0	30 12 00 0	3 16 6 0	2 20 12 0
33 10 0	2 7 16 0	1 12 2 0	41 16 8 0	3 20 14 0
93 12 0	3 7 18 0	2 12 4 0	1 16 10 0	52 20 16 0
13 14 0	20 8 00 0	3 12 6 0	2 16 12 0	1 20 18 0
23 16 0	1 8 2 0	31 12 8 0	3 16 14 0	2 21 00 0
33 18 0	2 8 4 0	1 12 10 0	42 16 16 0	3 21 2 0
104 00 0	3 8 6 0	2 12 12 0	1 16 18 0	53 21 4 0
14 2 0	21 8 8 0	3 12 14 0	2 17 0 0	1 21 6 0
24 4 0	1 8 10 0	32 12 16 0	3 17 2 0	2 21 8 0
34 6 0	2 8 12 0	1 12 18 0	43 17 4 0	3 21 10 0

Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.
54 21 12 0	3 26 6 0	2 31 00 0	1 35 14 0	101 40 8 0
1 21 14 0	60 26 8 0	3 31 2 0	2 35 16 0	1 40 10 0
2 21 16 0	1 26 10 0	7 31 4 0	3 35 18 0	2 40 12 0
3 21 18 0	2 26 12 0	1 31 6 0	90 36 00 0	3 40 14 0
55 22 00 0	3 26 14 0	2 31 8 0	1 36 2 0	102 40 16 0
1 22 2 0	67 26 16 0	3 31 10 0	2 36 4 0	1 40 18 0
2 22 4 0	1 26 18 0	79 31 12 0	3 36 6 0	2 41 0 0
3 22 6 0	2 27 00 0	1 31 14 0	91 36 8 0	3 41 2 0
56 22 8 0	3 27 2 0	2 31 16 0	1 36 10 0	103 41 4 0
1 22 10 0	68 27 4 0	3 31 18 0	2 36 12 0	1 41 6 0
2 22 12 0	1 27 6 0	80 32 00 0	3 36 14 0	2 41 8 0
3 22 14 0	2 27 8 0	1 32 2 0	92 36 16 0	3 41 10 0
57 22 16 0	3 27 10 0	2 32 4 0	1 36 18 0	104 41 12 0
1 22 18 0	69 27 12 0	3 32 6 0	2 37 00 0	1 41 14 0
2 23 00 0	1 27 14 0	81 32 8 0	3 37 2 0	2 41 16 0
3 23 2 0	2 27 16 0	1 32 10 0	93 37 4 0	3 41 18 0
58 23 4 0	3 27 18 0	2 32 12 0	1 37 6 0	105 42 0 0
1 23 6 0	70 28 00 0	3 32 14 0	2 37 8 0	1 42 2 0
2 23 8 0	1 28 2 0	82 32 16 0	3 37 10 0	2 42 4 0
3 23 10 0	2 28 4 0	1 32 18 0	94 37 12 0	3 42 6 0
59 23 12 0	3 28 6 0	2 33 00 0	1 37 14 0	106 42 8 0
1 23 14 0	71 28 8 0	3 33 2 0	2 37 16 0	1 42 10 0
2 23 16 0	1 28 10 0	83 33 4 0	3 37 18 0	2 42 12 0
3 23 18 0	2 28 12 0	1 33 6 0	95 38 00 0	3 42 14 0
60 24 00 0	3 28 14 0	2 33 8 0	1 38 2 0	107 42 16 0
1 24 2 0	72 28 16 0	3 33 10 0	2 38 4 0	1 42 18 0
2 24 4 0	1 28 18 0	84 33 12 0	3 38 6 0	2 43 00 0
3 24 6 0	2 29 00 0	1 33 14 0	96 38 8 0	3 43 2 0
61 24 8 0	3 29 2 0	2 33 16 0	1 38 10 0	108 43 4 0
1 24 10 0	73 29 4 0	3 33 18 0	2 38 12 0	1 43 6 0
2 24 12 0	1 29 6 0	85 34 00 0	3 38 14 0	2 43 8 0
3 24 14 0	2 29 8 0	1 34 2 0	97 38 16 0	3 43 10 0
62 24 16 0	3 29 10 0	2 34 4 0	1 38 18 0	109 43 12 0
1 24 18 0	74 29 12 0	3 34 6 0	2 39 00 0	1 43 14 0
2 25 00 0	1 29 14 0	86 34 8 0	3 39 2 0	2 43 16 0
3 25 2 0	2 29 16 0	1 34 10 0	98 39 4 0	3 43 18 0
63 25 4 0	3 29 18 0	2 34 12 0	1 39 6 0	110 44 00 0
1 25 6 0	75 30 00 0	3 34 14 0	2 39 8 0	1 44 2 0
2 25 8 0	1 30 12 0	87 34 16 0	3 39 10 0	2 44 4 0
3 25 10 0	2 30 14 0	1 34 18 0	99 39 12 0	3 44 6 0
64 25 12 0	3 30 16 0	2 35 00 0	1 39 14 0	111 44 8 0
1 25 14 0	76 30 18 0	3 35 2 0	2 39 16 0	1 44 10 0
2 25 16 0	1 30 10 0	88 35 4 0	3 39 18 0	2 44 12 0
3 25 18 0	2 30 12 0	1 35 6 0	100 40 00 0	3 44 14 0
65 26 00 0	3 30 14 0	2 35 8 0	1 40 2 0	112 44 16 0
1 26 2 0	77 30 16 0	3 35 10 0	2 40 4 0	1 44 18 0
2 26 4 0	1 31 0 0	89 35 12 0	3 40 6 0	2 44 20 0

Ch. IV. Victuallers, at 1 s. 4 d. per Barrel.

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TABLE II.

See it explained on Page 264.

Cash-Tables for Victuallers for the Excise of SMALL Beer, at 1 s. 4 d. per Barrel, calculated to a Quarter of a Barrel, by C. Leadbetter.

Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.
1 0 0 4	11 0 14 8	3 1 9 0	2 2 3 4	1 2 17 8
2 0 0 8	1 0 15 0	22 1 9 4	3 2 3 8	2 2 18 0
3 0 1 0	2 0 15 4	1 1 9 8	33 2 4 0	3 2 18 4
1 0 1 4	3 0 15 8	2 1 10 0	1 2 4 4	44 2 18 8
1 0 1 8	12 0 16 0	3 1 10 4	2 2 4 8	1 2 19 0
2 0 2 0	1 0 16 4	23 1 10 8	3 2 5 0	2 2 19 4
3 0 2 4	2 0 16 8	1 1 11 0	34 2 5 4	3 2 19 8
2 0 2 8	3 0 17 0	2 1 11 4	1 2 5 8	45 3 0 0
1 0 3 0	13 0 17 4	3 1 11 8	2 2 6 0	1 3 0 4
2 0 3 4	1 0 17 8	24 1 12 0	3 2 6 4	2 3 0 8
3 0 3 8	2 0 18 0	1 1 22 4	35 2 6 8	3 3 1 0
3 0 4 0	3 0 18 4	2 1 12 8	1 2 7 0	46 3 1 4
1 0 4 4	14 0 18 8	3 1 13 0	2 2 7 4	1 3 1 8
2 0 4 8	1 0 19 0	25 1 13 4	3 2 7 8	2 3 2 0
3 0 5 0	2 0 19 4	1 1 13 8	36 2 8 0	3 3 2 4
4 0 5 4	3 0 19 8	2 1 14 0	1 2 8 4	47 3 2 8
1 0 5 8	15 1 00 0	3 1 14 4	2 2 8 8	1 3 3 0
2 0 6 0	1 1 0 4	26 1 14 8	3 2 9 0	2 3 3 4
3 0 6 4	2 1 0 8	1 1 15 0	37 2 9 4	3 3 3 8
5 0 6 8	3 1 1 0	2 1 15 4	1 2 9 8	48 3 4 0
1 0 7 0	16 1 1 4	3 1 15 8	2 2 10 0	1 3 4 4
2 0 7 4	1 1 1 8	27 1 16 0	3 2 10 4	2 3 4 8
3 0 7 8	2 1 2 0	1 1 16 4	38 2 10 8	3 3 5 0
6 0 8 0	3 1 2 4	2 1 16 8	1 2 11 0	49 3 5 4
1 0 8 4	17 1 2 8	3 1 17 0	2 2 11 4	1 3 5 8
2 0 8 8	1 1 3 0	28 1 17 4	3 2 11 8	2 3 6 0
3 0 9 0	2 1 3 4	1 1 17 8	39 2 12 0	3 3 6 4
7 0 9 4	3 1 3 8	2 1 18 0	1 2 12 4	50 3 6 8
1 0 9 8	18 1 4 0	3 1 18 4	2 2 12 8	1 3 7 0
2 0 10 0	1 1 4 4	29 1 18 8	3 2 13 0	2 3 7 4
3 0 10 4	2 1 4 8	1 1 19 0	40 2 13 4	3 3 7 8
8 0 10 8	3 1 5 0	2 1 19 4	1 2 13 8	51 3 8 0
1 0 11 0	19 1 5 4	3 1 19 8	2 2 14 0	1 3 8 4
2 0 11 4	1 1 5 8	30 2 0 0	3 2 14 4	2 3 8 8
3 0 11 8	2 1 6 0	1 2 0 4	41 2 14 8	3 3 9 0
9 0 12 0	3 1 6 4	2 2 0 8	1 2 15 0	52 3 9 4
1 0 12 4	20 1 6 8	3 2 1 0	2 2 15 4	1 3 9 8
2 0 12 8	1 1 7 0	31 2 1 4	3 2 15 8	2 3 10 0
3 0 13 0	2 1 7 4	1 2 1 8	42 2 16 0	3 3 10 4
10 0 13 4	3 1 7 8	2 2 2 0	1 2 16 4	53 3 10 8
1 0 13 8	21 1 8 0	3 2 2 4	2 2 16 8	1 3 11 0
2 0 14 0	1 1 8 4	32 2 2 8	3 2 17 0	2 3 11 4
3 0 14 4	2 1 8 8	1 2 3 0	43 2 17 4	3 3 11 8

TABLE II. continued.

Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.	Bar. l. s. d.
54 3 12 0	3 4 7 8	2 5 3 4	1 5 19 0	101 6 14 8
1 3 12 4	66 4 8 0	3 5 3 8	2 5 19 4	1 6 15 0
2 3 12 8	1 4 8 4	78 5 4 0	3 5 19 8	2 6 15 4
3 3 13 0	2 4 8 8	1 5 4 4	90 6 0 0	3 6 15 8
55 3 13 4	3 4 9 0	2 5 4 8	1 6 0 4	102 6 16 0
1 3 13 8	67 4 9 4	3 5 5 0	2 6 0 8	1 6 16 4
2 3 14 0	1 4 9 8	79 5 5 4	3 6 1 0	2 6 16 8
3 3 14 4	2 4 10 0	1 5 5 8	91 6 1 4	3 6 17 0
56 3 14 8	3 4 10 4	2 5 6 0	1 6 1 8	103 6 17 4
1 3 15 0	68 4 10 8	3 5 6 4	2 6 2 0	1 6 17 8
2 3 15 4	1 4 11 0	80 5 6 8	3 6 2 4	2 6 18 0
3 3 15 8	2 4 11 4	1 5 7 0	92 6 2 8	3 6 18 4
57 3 16 0	3 4 11 8	2 5 7 4	1 6 3 0	104 6 18 8
1 3 16 4	69 4 12 0	3 5 7 8	2 6 3 4	1 6 19 0
2 3 16 8	1 4 12 4	81 5 8 0	3 6 3 8	2 6 19 4
3 3 17 0	2 4 12 8	1 5 8 4	93 6 4 0	3 6 19 8
58 3 17 4	3 4 13 0	2 5 8 8	1 6 4 4	105 7 0 0
1 3 17 8	70 4 13 4	3 5 9 0	2 6 4 8	1 7 0 4
2 3 18 0	1 4 13 8	82 5 9 4	3 6 5 0	2 7 0 8
3 3 18 4	2 4 14 0	1 5 9 8	94 6 5 4	3 7 1 0
59 3 18 8	3 4 14 4	2 5 10 0	1 6 5 8	106 7 1 4
1 3 19 0	71 4 14 8	3 5 10 4	2 6 6 0	1 7 1 8
2 3 19 4	1 4 15 0	83 5 10 8	3 6 6 4	2 7 2 0
3 3 19 8	2 4 15 4	1 5 11 0	95 6 6 8	3 7 2 4
60 4 0 0	3 4 15 8	2 5 11 4	1 6 7 0	107 7 2 8
1 4 0 4	72 4 16 0	3 5 11 8	2 6 7 4	1 7 3 0
2 4 0 8	1 4 16 4	84 5 12 0	3 6 7 8	2 7 3 4
3 4 1 0	2 4 16 8	1 5 12 4	96 6 8 0	3 7 3 8
61 4 1 4	3 4 17 0	2 5 12 8	1 6 8 4	108 7 4 0
1 4 1 8	73 4 17 4	3 5 13 0	2 6 8 8	1 7 4 4
2 4 2 0	1 4 17 8	85 5 13 4	3 6 9 0	2 7 4 8
3 4 2 4	2 4 18 0	1 5 13 8	97 6 9 4	3 7 5 0
62 4 2 8	3 4 18 4	2 5 14 0	1 6 9 8	109 7 5 4
1 4 3 0	74 4 18 8	3 5 14 4	2 6 10 0	1 7 5 8
2 4 3 4	1 4 19 0	86 5 14 8	3 6 10 4	2 7 6 0
3 4 3 8	2 4 19 4	1 5 15 0	98 6 10 8	3 7 6 4
63 4 4 0	3 4 19 8	2 5 15 4	1 6 11 0	110 7 6 8
1 4 4 4	75 5 0 0	3 5 15 8	2 6 11 4	1 7 7 0
2 4 4 8	1 5 0 4	87 5 16 0	3 6 11 8	2 7 7 4
3 4 5 0	2 5 0 8	1 5 16 4	99 6 12 0	3 7 7 8
64 4 5 4	3 5 1 0	2 5 16 8	1 6 12 4	111 7 8 0
1 4 5 8	76 5 1 4	3 5 17 0	2 6 12 8	1 7 8 4
2 4 6 0	1 5 1 8	88 5 17 4	3 6 13 0	2 7 8 8
3 4 6 4	2 5 2 0	1 5 17 8	100 6 13 4	3 7 9 0
65 4 6 8	3 5 2 4	2 5 18 0	1 6 13 8	112 7 9 4
1 4 7 0	77 5 2 8	3 5 18 4	2 6 14 0	
2 4 7 4	1 5 3 0	89 5 18 8	3 6 14 4	

Common Brewers in the Country, at 8 s. per Barrel.

TABLE III.

See it explained on Page 264.

Cash-Tables for the Excise on STRONG Beer and Ale, for the Use of COMMON Brewers in the COUNTRY, at 8 s. per Barrel, with their Allowance * of TWO Barrels and an HALF upon every 23, being deducted out of the said 8 s.

Bar.	l.	s.	d.	q.	pts.	Bar.	l.	s.	d.	q.	pts.
1	0	1	9	1	13	120	42	15	7	3	7
2	0	3	6	3	3	130	46	6	11	1	21
3	0	5	4	0	16	140	49	18	3	0	12
4	0	7	1	2	6	150	53	9	6	3	3
5	0	9	4	3	0	160	57	0	10	1	17
6	1	1	4	2	18	170	60	12	2	0	8
7	1	8	6	1	1	180	64	3	5	2	22
8	1	15	7	3	7	190	67	14	9	1	13
9	2	2	9	1	13	200	71	6	1	0	4
10	2	9	10	3	19	210	74	17	4	2	18
11	3	17	0	2	2	220	78	8	8	1	9
12	3	4	2	0	8	230	82	0	0	0	0
13	3	11	3	2	14	240	85	11	3	2	14
14	3	18	5	0	20	250	89	2	7	1	5
15	4	5	6	3	3	260	92	13	10	3	19
16	4	12	8	1	9	270	96	5	2	2	10
17	4	19	9	3	15	280	99	16	6	1	1
18	5	6	11	1	21	290	103	7	9	3	15
19	5	14	1	0	4	300	106	19	1	2	6
20	6	1	2	2	10	310	110	10	5	0	20
21	6	8	4	0	16	320	114	1	8	3	11
22	6	15	5	2	22	330	117	13	0	2	2
23	7	2	7	1	5	340	121	4	4	0	16
24	7	9	8	3	11	350	124	15	7	3	7
25	7	16	10	2	17	360	128	6	11	1	21
26	8	4	0	0	0	370	131	18	3	0	12
27	10	13	10	3	19	380	135	9	6	3	3
28	14	5	2	2	10	390	139	0	10	1	17
29	17	16	6	1	1	400	142	12	2	0	8
30	21	7	9	3	15	410	146	3	5	2	22
31	24	19	1	2	6	420	149	14	9	1	13
32	28	10	5	0	20	430	153	6	1	0	4
33	32	1	8	3	11	440	156	17	4	2	18
34	35	13	0	2	2	450	160	8	8	1	9
35	39	4	4	0	16	460	164	0	0	0	0

* The Acts of Parliament relating to the respective Duties and Allowances on STRONG Beer and Ale, and SMALL Beer, are 12 Car. II. c. 4, 5, Will. & M. 4, 8 Ann. and 33 Geo. II.

S 2

Common Brewers in the Country, at 1 s. 4 d. per Bar.

TABLE IV.

See it explained on Page 264.

Cash-Tables for the Excise on SMALL BEER, for the Use of
Common Brewers in the Country, at 1 s. 4 d. per Bar-
rel, with their Allowance of TWO Barrels and an HALF
upon every 23, being deducted out of the said 1 s. 4 d. by
C. Leadbetter.

Bar.	l.	s.	d.	q.	pts.	Bar.	l.	s.	d.	q.	pts.
020	0	0	3	2	6	110	6	10	8	2	18
020	0	0	7	0	12	120	7	2	7	1	5
020	0	0	10	2	18	130	7	14	5	0	15
020	0	1	2	1	1	140	8	6	4	2	2
020	0	2	4	2	2	150	8	18	3	0	12
020	0	3	6	3	3	160	9	10	1	2	22
020	0	4	9	0	4	170	10	2	0	1	9
020	0	5	11	1	5	180	10	13	10	3	19
020	0	7	1	2	6	190	11	5	9	2	6
020	0	8	3	3	7	200	11	17	8	0	16
020	0	9	6	0	8	210	12	9	6	3	3
020	0	10	8	1	9	220	13	1	5	1	13
020	0	11	10	2	10	230	13	13	4	0	0
020	0	13	0	3	11	240	14	5	2	2	10
020	0	14	3	0	12	250	14	17	1	0	20
020	0	15	5	1	13	260	15	8	11	3	7
020	0	16	7	2	14	270	16	0	10	1	17
020	0	17	9	3	15	280	16	12	9	0	4
020	0	19	0	0	16	290	17	4	7	2	14
020	1	0	2	1	17	300	17	16	6	1	1
020	1	1	4	2	18	310	18	8	4	3	11
020	1	2	6	3	19	320	19	0	3	1	21
020	1	3	9	0	20	330	19	12	2	0	8
020	1	4	11	1	21	340	20	4	0	12	18
020	1	6	1	2	22	350	20	15	11	1	5
020	1	7	4	0	0	360	21	7	9	3	15
020	1	15	7	3	7	370	21	19	8	12	2
020	2	7	0	1	17	380	22	1	7	0	12
020	2	19	5	0	4	390	22	3	5	2	22
020	3	11	3	2	14	400	23	15	4	1	9
020	4	3	2	1	1	410	24	7	2	3	19
020	4	15	0	3	11	420	24	19	1	2	6
020	5	6	11	1	28	430	25	11	0	0	16
020	5	18	10	0	8	440	27	6	8	0	0

Common Brewers in London, at 8s. per Barrel.

B E E R.

TABLE V.

See it explained on Page 264.

Cash-Tables for the *Excise* on *Strong Beer*, for the Use of *Common Brewers in London*, or the *Bills of Mortality*, at *8s. per Barrel*, with their *Allowance* of 3 Barrels upon every 23, being deducted out of the said 8s.

Bar.	l.	s.	d.	q.	23	Bar.	l.	Bar.	l.	Bar.	l.
1	0	1	8	3	11	46	16	966	336	1886	656
2	0	3	5	2	22	69	24	989	344	1909	664
3	0	5	2	2	10	92	32	1012	352	1932	672
4	0	6	11	1	21	115	40	1035	360	1955	680
5	0	13	10	3	13	138	48	1058	368	1978	688
6	1	0	10	1	17	161	56	1081	376	2001	696
7	1	7	9	3	15	184	64	1104	384	2024	704
8	1	14	9	1	13	207	72	1127	392	2047	712
9	2	1	8	3	11	230	80	1150	400	2070	720
10	2	8	8	1	9	253	88	1173	408	2093	728
11	2	15	7	3	7	276	96	1196	416	2116	736
12	3	2	7	1	5	299	104	1219	424	2139	744
13	3	9	6	3	3	322	112	1242	432	2162	752
14	3	16	6	1	1	345	120	1265	440	2185	760
15	4	3	5	2	22	368	128	1288	448	2208	768
16	4	10	5	0	20	391	136	1311	456	2231	776
17	4	17	4	2	18	414	144	1334	464	2254	784
18	5	4	4	0	16	437	152	1357	472	2277	792
19	5	11	3	2	14	460	160	1380	480	2300	800
20	5	18	3	0	12	483	168	1403	488	2323	808
21	6	5	2	2	10	506	176	1426	496	2346	816
22	6	12	2	0	8	529	184	1449	504	2369	824
23	6	19	1	2	6	552	192	1472	512	2392	832
24	7	6	0	1	4	575	200	1495	520	2415	840
25	7	13	0	2	2	598	208	1518	528	2438	848
26	7	20	0	0	0	621	216	1541	536	2461	856
27	8	0	0	0	0	644	224	1564	544	2484	864
28	8	7	0	2	2	667	232	1587	552	2507	872
29	8	14	0	0	0	690	240	1610	560	2530	880
30	8	21	0	0	0	713	248	1633	568	2553	888
31	9	0	0	0	0	736	256	1656	576	2576	896
32	9	7	0	0	0	759	264	1679	584	2599	904
33	9	14	0	0	0	782	272	1702	592	2622	912
34	9	21	0	0	0	805	280	1725	600	2645	920
35	10	0	0	0	0	828	288	1748	608	2668	928
36	10	7	0	0	0	851	296	1771	616	2691	936
37	10	14	0	0	0	874	304	1794	624	2714	944
38	10	21	0	0	0	897	312	1817	632	2737	952
39	11	0	0	0	0	920	320	1840	640	2760	960
40	11	7	0	0	0	943	328	1863	648	2783	968

Common Brewers in London, at 8s. per Barrel.

A. L. E.

TABLE VI.

See it explained on Page 264.

Cash-Tables for the Excise on Ale, for the Use of Common Brewers in LONDON, at 8s. per Barrel, with their Allowance of 2 Barrels upon 22, being deducted out of the said 8s.

Bar.	l.	s.	d.	q.	pts.	Bar.	l.	Bar.	l.	Bar.	l.
1	0	1	9	3	3	44	16	924	336	1804	656
1 1/2	0	3	7	2	6	66	24	946	344	1826	664
2 1/2	0	5	5	1	9	88	32	968	352	1848	672
3	0	7	3	1	1	110	40	990	360	1870	680
4	0	14	6	2	2	132	48	1012	368	1892	688
5	1	1	9	3	3	154	56	1034	376	1914	696
6	1	9	1	0	4	176	64	1056	384	1936	704
7	1	16	4	1	5	198	72	1078	392	1958	712
8	2	3	7	2	6	220	80	1100	400	1980	720
9	2	10	10	3	7	242	88	1122	408	2002	728
10	2	18	2	0	8	264	96	1144	416	2024	736
11	3	5	5	1	9	286	104	1166	424	2046	744
12	3	12	8	2	10	308	112	1188	432	2068	752
13	4	0	0	0	0	330	120	1210	440	2090	760
14	4	7	3	1	1	352	128	1232	448	2112	768
15	4	14	6	2	2	374	136	1254	456	2134	776
16	5	1	9	3	3	396	144	1276	464	2156	784
17	5	9	1	0	4	418	152	1298	472	2178	792
18	5	16	4	1	5	440	160	1320	480	2200	800
19	6	3	7	2	6	462	168	1342	488	2222	808
20	6	10	10	3	7	484	176	1364	496	2244	816
21	6	18	2	0	8	506	184	1386	504	2266	824
22	7	5	5	1	9	528	192	1408	512	2288	832
	7	12	8	2	10	550	200	1430	520	2310	840
	8	0	0	0	0	572	208	1452	528	2332	848
						594	216	1474	536	2354	856
						616	224	1496	544	2376	864
						638	232	1518	552	2398	872
						660	240	1540	560	2420	880
						682	248	1562	568	2442	888
						704	256	1584	576	2464	896
						726	264	1606	584	2486	904
						748	272	1628	592	2508	912
						770	280	1650	600	2530	920
						792	288	1672	608	2552	928
						814	296	1694	616	2574	936
						836	304	1716	624	2596	944
						858	312	1738	632	2618	952
						880	320	1760	640	2640	960
						902	328	1782	648	2662	968

Common Brewers in London, at 1 s. 4 d. per Barrel.

TABLE VII.

See it explained on Page 264.

Cash-Tables for the Excise of SMALL Beer for the Use of COMMON Brewers in LONDON, at 1 s. 4 d. per Barrel, with their Allowance of 3 Barrels upon every 23, being deducted out of the said 1 s. 4 d. by C. Leadbetter.

Bar.	l.	s.	d.	q.	23	Bar.	l.	s.	d.	Bar.	l.	s.	d.
1	0	0	3	1	21	483	28	0	0	1633	94	13	4
2	0	0	6	3	19	506	29	6	8	1656	95	0	0
3	0	0	10	1	17	529	30	3	4	1679	97	6	8
4	0	0	14	1	15	552	32	0	0	1702	98	13	4
5	0	0	18	1	13	575	33	6	8	1725	100	0	0
6	0	0	22	3	7	598	34	13	4	1748	101	6	8
7	0	0	26	5	22	621	36	0	0	1771	102	13	4
8	0	0	30	7	2	644	37	6	8	1794	104	0	0
9	0	0	34	9	2	667	39	13	4	1817	105	6	8
10	0	0	38	11	1	690	40	0	0	1840	106	13	4
11	0	0	42	1	13	713	41	6	8	1863	108	0	0
12	0	0	46	3	5	736	42	13	4	1886	109	6	8
13	0	0	50	5	1	759	44	0	0	1909	110	13	4
14	0	0	54	7	0	782	45	6	8	1932	112	0	0
15	0	0	58	9	0	805	46	13	4	1955	113	6	8
16	0	0	62	11	0	828	48	0	0	1978	114	13	4
17	0	0	66	1	39	851	49	6	8	2001	116	0	0
18	0	0	70	3	11	874	50	13	4	2024	117	6	8
19	0	0	74	5	3	897	52	0	0	2047	118	13	4
20	0	0	78	7	0	920	53	6	8	2070	120	0	0
21	0	0	82	9	2	943	54	13	4	2093	121	6	8
22	0	0	86	11	2	966	56	0	0	2116	122	13	4
23	0	0	90	1	17	989	57	6	8	2139	124	0	0
24	0	0	94	3	9	1012	58	13	4	2162	125	6	8
25	0	0	98	5	1	1035	60	0	0	2185	126	13	4
26	0	0	102	7	0	1058	61	6	8	2208	128	0	0
27	0	0	106	9	0	1081	62	13	4	2231	129	6	8
28	0	0	110	11	0	1104	64	0	0	2254	130	13	4
29	0	0	114	1	39	1127	65	6	8	2277	132	0	0
30	0	0	118	3	11	1150	66	13	4	2300	133	6	8
31	0	0	122	5	3	1173	68	0	0	2323	134	13	4
32	0	0	126	7	0	1196	69	6	8	2346	136	0	0
33	0	0	130	9	2	1219	70	13	4	2369	137	6	8
34	0	0	134	11	2	1242	72	0	0	2392	138	13	4
35	0	0	138	1	39	1265	73	6	8	2415	140	0	0
36	0	0	142	3	11	1288	74	13	4	2438	141	6	8
37	0	0	146	5	3	1311	76	0	0	2461	142	13	4
38	0	0	150	7	0	1334	77	6	8	2484	144	0	0
39	0	0	154	9	2	1357	78	13	4	2507	145	6	8
40	0	0	158	11	2	1380	80	0	0	2530	146	13	4
41	0	0	162	1	39	1403	81	6	8	3060	293	6	8
42	0	0	166	3	11	1426	82	13	4	7590	440	0	0
43	0	0	170	5	3	1449	84	0	0	10120	586	13	4
44	0	0	174	7	0	1472	85	6	8	12650	733	6	8
45	0	0	178	9	2	1495	86	13	4	15180	800	0	0
46	0	0	182	11	2	1518	88	0	0	17710	1026	13	4
47	0	0	186	1	39	1541	89	6	8	20240	1173	6	8
48	0	0	190	3	11	1564	90	13	4	22770	1320	0	0
49	0	0	194	5	3	1587	92	0	0	25300	1466	13	4
50	0	0	198	7	0	1610	93	6	8	27830	1613	6	8

CHAP. V. Concerning the Business and Duty of those Officers of the Excise that survey Maltsters, and those that deal in Cyder and Perry; so as to prevent those Traders from evading the Duty, and defrauding the Revenue.

Maltsters in
Foot-walks, how
often to be sur-
veyed.

Maltsters in
Rides how often
to be surveyed.

The Officer
should double
upon the Malt-
sters to discover
Frauds.

Of the Dimen-
sions of the Ci-
sterns, Utin-
g-Fat, and Couch
Frames.

The Officer to
take one Gauge
a while before
the Water is let
out of the Ci-
stern.
To see the Corn
lie level.

Where a Diffe-
rence in the
Depth, to take
it at a Medium.
All Gauges to be
taken with a
Brass Plate.

THE Officer that has a FOOT-WALK, must survey the Maltsters in his Town once at least every Day, and where the best Cistern-Gauges, and the best Couch-Gauges are depending; and if these Surveys are made in the Night, must be in the Presence of a CONSTABLE, or other lawful Peace-Officer, in case he cannot have Admittance without them. The Officer who has a RIDE, that he can ride in one Day, must survey the Maltsters at least four Times in a Week, or nine Times in a Fortnight; and where his Division is such, that it cannot be rode under two Days, he must survey the Maltsters thrice a Week, if possible; but this is not always to be done after one and the same Manner, nor beginning always at the same Place; but sometimes to ride the same Round twice together, so that by doubling upon the Maltsters, and surveying them at Times unexpected, he may get the more Gauges on the Steepings, and thereby more likely to discover Frauds. And where the Officer's Division may be rode all in one Day, he must not divide it into two Days riding to avoid surveying as is above directed. The Officer must enter the Dimensions and Areas of each Cistern and Utin-g-Fat, into his Malt-Book; and where Couch Frames are used, he must take their Dimensions when they are empty, and enter the same with the Area at the Top of his Ledger; but then he must not entirely depend upon those Dimensions, but he must try the same upon every Gauge he takes. He must likewise, in the Town where he resides, take care that one of his Gauges be taken (if possible) some short Time before the Water is let out of the Cistern, or Utin-g-Fat, taking the Depth in three or four Places. And he must be careful before he takes his Gauge, that the Corn be raked or made level, and of an equal Depth, as near as possible, throughout all the Parts of the Cistern; so that by raking the Corn from the Middle to the Sides of the Cistern, as has frequently been practised, he may not be imposed on, by taking his Gauge in such Part of the Cistern where the Corn is not so deep as in other Parts. And when he finds any Difference as to the Depth, then he must take it at a Medium, and enter it into his Ledger as the true Gauge; and he must take all his Gauges with a Brass Plate on his Rule or Case. He must

• If the Cistern or Tub that Barley is wet or steeped in,

annex Cyphers to Depths and Diameters at even Inches, and prefix Cyphers to Depths under ten Inches. When the Barley or other Grain has been thrown out of the Cistern, and before it has lain thirty Hours out, the Officer must take one or more Gauges of it, viz. One as soon as he can after it has been thrown out, and another as near the End of Thirty Hours as his other Business will admit; and he must enter in his Book the Length, Breadth, and Depth of each Couch-Gauge, in case it be of a Square or Oblong Form; and if it be a Circle, the Diameter and Depth. And in case it be his first Couch-Gauge, he must express the Number of Hours the Corn has been out of the Cistern, before which Number of Hours, if under ten, he must set a Cypher with a Dash through it; and place the same before the Hours in the Cistern when they are under Ten: And this Mark is to be set on the Left Hand of the Hours. Note, the best of your Cistern or Couch-Gauges are to be entered in the Column for the best Gauge, and that is to be the Charge; unless the same happen to be exceeded by some subsequent Floor-Gauge, in manner following, viz. Notwithstanding the Officer's having taken the forementioned Couch-Gauges, within thirty Hours after the Corn is out of the Cistern; yet he must continue his gauging the Corn until it be quite dried off; and where he shall have any subsequent Floor-Gauge, when the Allowance of Ten in the Score is deducted, which shall exceed the best of the Cistern or Couch-Gauge, when the Allowance of Four in the Score is deducted; then he must charge from such Floor-Gauge; and when he is taking the Couch, or Floor-Gauges, he must with his Hand, or otherwise, examine, and endeavour to discover whether such Couch or Floor be all of the same Wetting: And if he finds any unfair Addition made from private Wettings, or any Mixture of one Steeping with another, before the same is put out on the Kilo for drying; or that the Corn which is in steeping, or that hath been steeped, to be rammed, pressed, trodden, or otherwise forced together, he must inform the Collector and Supervisor therewith, that an Information may be laid against such Offender: And whenever the Officer takes either any Couch or Floor-Gauge, he must enter the then Condition of the Cistern or Utting-Fat, and By-tub respectively. And in such Places where he cannot survey his Division all in one Day, if he happens to miss a Couch, by reason of its being above thirty Hours out, in this Case he must enter in his Book the true Number of Hours that it has been out, and take a Gauge of such Corn, and enter the Dimensions in the Couch-Column; through which he must make a Dash, and so take a subsequent Gauge thereof; the Hours out, exceeding thirty, shewing its Use, which is only for a Compare-Gauge. Since there have been many Instances of Maltsters, who after the Officers have taken their Cistern-Gauges, have privately conveyed away the greatest Part of the Corn thus gauged from the Cistern, and supplied the same with fresh Barley, covering the fresh Barley with Part

Of using of Cyphers. When Gauges must be taken.

If a Square or Oblong, $\frac{1}{2}$ M
If a Circle, $\frac{1}{2}$ M
The Hours out, $\frac{1}{2}$ M
Of denoting the Time out of the Cistern.

Of the best of Cistern or Couch-Gauge, and how to charge the Duty when these are exceeded by a subsequent Floor-Gauge. Allowance on Floor-Gauge is 10 Bushels in 20 or $\frac{1}{2}$

Allowance on a Cistern or Couch-Gauge is four Bushels in 20, or $\frac{1}{5}$

Must examine that the Couch or Floor be all of one Wetting. Must observe that Corn is not forced together. When the Condition of the Cistern is to be entered.

When Corn has been above 30 Hours out of the Cistern.

Of taking a Compare-Gauge. Of removing Part of the Corn, supplying the Cistern with fresh Barley.

How to be guarded against.

The Colour of the Water to be observed.

Of the Brass-Receiver.

Where fresh Corn has been added.

Why the wet and dry Inches compared with the real Depth.

When such Practices are discovered, the Collector and Supervisor must be made acquainted.

Maltsters to be surveyed on Sunday.

Of the Excise-Year, and when it begins; of which Maltsters are to be acquainted, and why.

The Officer's Duty when Maltsters neglect making Entries.

When the Officer may leave off surveying Maltsters.

But must still guard against Fraud, and how.

And may demand Entrance.

And if he discerns Fraud must acquaint the Collector.

If he is denied Admittance.

Must examine the Parcels of dry Barley in the Malt-house.

of the Corn which was steeped before; the Officer must therefore use the best of his Skill by *biting* the Corn got from *different Depths* of the Cistern, or otherwise, to discover whether any unfair Practice hath been used, which may, in some measure, be discovered by the *Colour of the Water*: But the *Brass Receiver* not answering the Intention of it, will afford him no Satisfaction in this Matter, unless it be in *speculative Gauging**. And where he discovers any foul Practice, he must make a *new Charge* upon the Maltster of so much Corn, as, in his Judgment, hath been *added* to the Barley formerly charged by him. Now the Officer, when he gauges any Cistern, he must observe the *dry* as well *wet Inches* of such Cistern, and compare both with the *real Depth* of the said Cistern; by which means he will perceive whether any *Bricks, Stones, Boards*, or other Things are put into the Cistern to hinder his coming at the *Bottom* of it: And where he finds any such *Bricks, Stones*, or other Things put into any Cistern, he must inform the *Collector or Supervisor* thereof, that they may prosecute the Offender for such Practices. Since from the Nature of the *Maltsters Trade*, they may have Occasion to work on *Sundays*, the Officer must therefore in the Town he resides, *before or after* Divine Service, survey all the Maltsters, and such Maltsters in the Country, from whom he has Reason to suspect Frauds and unfair Practices. *N.B.* The *Excise Year* beginning the 5th of *July*, the Officer every Year *before* Midsummer, must inform each Maltster in his Survey, that before he begins to make Malt the Year ensuing, he must make a new Entry of all his Rooms, Cisterns, Kilns, and other Places and Utensils, for the making and keeping of Malt; and if any Maltster neglects so to do, the Officer must acquaint the *Collector* therewith. But he must not leave off surveying such Maltster's House, unless he *expressly declare* to him, that he will not make Malt that Year: in which Case, he must immediately enter such Declaration in the Body of his Book, and also among the Remarks for that Day in his Journal; after which he may leave off surveying at such a House, but must carefully observe and inform himself the best he can, whether such Maltster continues to make Malt, notwithstanding his Declaration to the contrary. And if he has *Proof* that he has done so, or has good Reason to believe it, he is to demand Entrance, in order to survey his House as he does other Maltsters Houses; and if he is admitted, and finds any Malt making, he must immediately acquaint the *Collector* therewith, that the Maltster may be prosecuted for making use of a Cistern, Floor, &c. *without giving legal Notice*. But if he cannot get Admittance to enter and survey, he must by the *first* Post acquaint the *Board* therewith; and he must send a *particular* Account of the Proof or Suspicion he has, that the Maltster did make Malt contrary to his Declaration. The Officer must frequently examine the several Parcels of *dry Barley* in each Malt-house, and where he finds any *sprinkled* with Water, he may

* Every Officer knows this, and yet the Expence of it still enjoined.

may be sure 'tis a Preparation for unfair Practice, which by his Care and Diligence he may prevent and discover; and he must, from Time to Time, search after all *private and concealed* Cisterns or Vessels for steeping or keeping Barley, or other Grain, and for Rooms or Places for laying Malt: And he must have a particular Care that no Fraud be carried on in any *Barn*, or other Place adjoining to any Malt-house; and he must likewise be well satisfied that there is no *Door covered like the Wall*, no Range of Boards to be taken down, nor any *private Passage* whatsoever, out of the said Malt-house into any other Place; and upon finding any such, he must inform the *Supervisor or Collector* therewith, that they may lay an *Information* for the same against such Offenders. The Officer must take particular Care, that upon each Survey he makes, that he goes *quite thro'* the Malt-house, and *all* the entered Rooms, to see how many Floors there are, having a careful Eye to each Parcel, and comparing the *Condition thereof* with the *Time out* expressed in his Book; and he is also to observe, that there is no *new Wetting laid between the old ones*, nor any *Addition made by mixing from the Cistern*, or by Malt brought from any Steeping-Place.

He must observe, That when it happens that a *Floor-Gauge* of any Steeping is taken, which will make a better Charge than the Cistern or Couch-Gauges of the same, after making the respective Deductions or Allowances, which are *Four in Twenty* for the Cistern or Couch, and *Ten in Twenty* for the Floor; the Amount of the *best Cistern or Couch*, placed in the Column titled *best*, must be *cancelled* or a Line drawn thro' the same, to signify that it does not make a *Charge*, but that the Charge arises from the *Floor-Gauge*, whose Content must not in such Case be *cancelled*. The Way that is practised for finding whether the Amount of the *Cistern or Couch* (allowing *Four in Twenty*, that is $\frac{1}{5}$ Part) or the Amount of the Floor (allowing *Ten in Twenty*, that is $\frac{1}{2}$) will make the *best Charge*, is this; multiply the Cistern or Couch-Bushels by 14.6, and the *Product* will be a Number of *Floor-Bushels*, that are equal in Charge to those Cistern or Couch-Bushels; but if you would find a Number of Couch or Cistern-Bushels, equal in Charge to any Number of Floor-Bushels, multiply the Floor-Bushels, by .625, and the *Product* will be the Number of Couch or Cistern-Bushels, equal in Charge to those Floor-Bushels.

The Officer must mark every entered Room upon the Door thereof, or some other visible Part, with 1, 2, 3, &c. with white Lead and Oil, according to the Number that are entered in the whole; But he must let no Room be put into the Scheme (See Page 232) under two Denominations, *viz.* it must not be included both in the Number of Rooms for working Malt, and in the Number for laying dry Barley or Malt, though it may happen to be used for both Purposes; for it must be his Endeavour that a greater Number of Rooms than are actually entered may not appear in the Scheme.

To seek for private Cisterns, &c. *viz.*

Rooms for laying Malt.

Of Bains, &c. near the Malt-house.

And private Doors and Boards to be taken down.

And private Passages.

Must go thro' the Malt house and all the entered Rooms, &c.

Of new Wetting laid berwixt the old ones, &c.

When a Floor-Gauge will make the best Charge.

The Method of discovering whether the Account of the Cistern and Couch or Floor-Gauge, will make the best Charge.

Must mark the entered Rooms.

Concerning Malt-Compounders.

Of Compounders.

Must enter the Compounders in his Books, and how.

Must be transferred from Book to Book, and why.

Must go to the Compounders, to know if they continue their Composition.

When to pay for Stock in Hand, &c.

THE Officer must take Notice, that at the next Sitting Day, after each General Quarter Day, he must bring into his Voucher (See Page 239.) all the Compounders in his Division, mentioning their Names and Number of Heads, and charge them in his Voucher with the Quarter's Composition; and, at the End of his Malt-Leidger, he must enter the Names of all the Compounders in his Division, with the Number of Heads in their respective Families compounded for; and he must transfer them from Book to Book, and from Time to Time, to inform himself whether there has been any Addition to their Family since the preceding Quarter; and if he finds any Addition made, he must give Notice thereof to the Collector: And the Officer, upon every Old Midsummer-Day, must go to all the Compounders in his Division; and if they either have not, or do not then continue their Composition for the next Year, he must gauge and take an Account of all the Malt which he can find in the Hands of, or belonging to such Person, that was a Compounder for the last Year, and charge him with the Duty thereof; and from thenceforth continue to survey and charge him with all the Malt he shall make for the future.

Tables VIII. and IX. explained.

The EXPLANATION and USE of the following TABLES FOR MALTSTERS.

Example.

Example. A Maltster is charged with 381 Bushels from Cistern and Couch, and 94 Bushels from the Floor; I demand how much Neat Duty he is to pay for it?

1st. Look in Table VIII. for 381 Bushels:

Now, because I cannot find that Number at once, I take it out thus

300	9	0	0
80	2	8	0
1	0	7	0
Total 381	11	8	7

2^{dly}, Look in Table IX. for 94 Bushels, and you find

Total 13	3	16	0
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And thus you have found that 13^l. 3^s. 16^d. is the Neat Duty or Excise to be paid for 381 Bushels of Malt from the Cistern and Couch, and 94 Bushels from the Floor.

N. B. The Fractional Parts of a Farthing in these Tables are never regarded, unless they amount to half a Farthing.

TABLE

TABLE VIII.

See it explained on Page 278.

Cash-Tables at 9 d. per Bushel, for the Duty on MALT IN the Cistern, or when it has been Out of it less than 30 Hours*: The Allowance to be made the Malster, at that Time, of 4 Bushels in every 20, being deducted out of the said 9 d.

No. of Bush.	l. s. d. q. p.	Bush.	l. s. d. q. p.	Bush.	l. s. d. q. p.	Bush.	l. s. d. q. p.
1	0 7 0 4	34	1 0 4 3 1	67	2 0 2 1 3	100	3 0
2	1 2 1 3	35	1 1 0 0 0	68	2 0 9 2 2	110	3 6
3	1 9 2 2	36	1 1 7 0 4	69	2 1 4 3 1	120	3 12
4	2 4 3 1	37	1 2 2 1 3	70	2 2 0 0 0	130	3 18
5	3 0 0 0	38	1 2 9 2 2	71	2 2 7 0 4	140	4 4
6	3 7 0 4	39	1 3 4 3 1	72	2 3 2 1 3	150	4 10
7	4 2 1 3	40	1 4 0 0 0	73	2 3 9 2 2	160	4 16
8	4 9 2 2	41	1 4 7 0 4	74	2 4 4 3 1	170	5 2
9	5 4 3 1	42	1 5 2 1 3	75	2 5 0 0 0	180	5 8
10	6 0 0 0	43	1 5 9 2 2	76	2 5 7 0 4	190	5 14
11	6 7 0 4	44	1 6 4 3 1	77	2 6 2 1 3	200	6 0
12	7 2 1 3	45	1 7 0 0 0	78	2 6 9 2 2	210	6 6
13	7 9 2 2	46	1 7 7 0 4	79	2 7 4 3 1	220	6 12
14	8 4 3 1	47	1 8 2 1 3	80	2 8 0 0 0	230	6 18
15	9 0 0 0	48	1 8 9 2 2	81	2 8 7 0 4	240	7 4
16	9 7 0 4	49	1 9 4 3 1	82	2 9 2 1 3	250	7 10
17	10 2 1 3	50	1 10 0 0 0	83	2 9 9 2 2	300	9 0
18	10 9 2 2	51	1 10 7 0 4	84	2 10 4 3 1	400	12 0
19	11 4 3 1	52	1 11 2 1 3	85	2 11 0 0 0	500	15 0
20	12 0 0 0	53	1 11 9 2 2	86	2 11 7 0 4	600	18 0
21	12 7 0 4	54	1 12 4 3 1	87	2 12 2 1 3	700	21 0
22	13 2 1 3	55	1 13 0 0 0	88	2 12 9 2 2	800	24 0
23	13 9 2 2	56	1 13 7 0 4	89	2 13 4 3 1	900	27 0
24	14 4 3 1	57	1 14 2 1 3	90	2 14 0 0 0	1000	30 0
25	15 0 0 0	58	1 14 9 2 2	91	2 14 7 0 4	2000	60 0
26	15 7 0 4	59	1 15 4 3 1	92	2 15 2 1 3	3000	90 0
27	16 2 1 3	60	1 16 0 0 0	93	2 15 9 2 2	4000	120 0
28	16 9 2 2	61	1 16 7 0 4	94	2 16 4 3 1	5000	150 0
29	17 4 3 1	62	1 17 2 1 3	95	2 17 0 0 0	6000	180 0
30	18 0 0 0	63	1 17 9 2 2	96	2 17 7 0 4	7000	210 0
31	18 7 0 4	64	1 18 4 3 1	97	2 18 2 1 3	8000	240 0
32	19 2 1 3	65	1 19 0 0 0	98	2 18 9 2 2	9000	270 0
33	19 9 2 2	66	1 19 7 0 4	99	2 19 4 3 1	10000	300 0

* See Page 191.

M. R. The Fractional Part of a Farthing in these Tables are never regarded, unless they amount to half a Farthing.

TABLE IX.

See it explained on Page 278.

Cash Tables at 9 d. per Bushel for the Duty on MALT, when it has been OUT OF the Cistern 30 Hours or more*: The Allowance to be made the Maltster at that Time, of 10 Bushels in every 20, being deducted out of the said 9 d.

N ^o of Bush.	s.	d.	q.	Bush.	l.	s.	d.	q.	Bush.	l.	s.	d.	q.	Bush.	l.	s.	d.	q.
1	0	4	2	34	0	12	9	0	67	1	5	1	2	100	1	17	6	0
2	0	9	0	35	0	13	1	2	68	1	5	6	0	110	2	1	3	0
3	1	1	2	36	0	13	6	0	69	1	5	10	2	120	2	5	0	0
4	1	6	0	37	0	13	10	2	70	1	6	3	0	130	2	8	9	0
5	1	10	2	38	0	14	3	0	71	1	6	7	2	140	2	12	6	0
6	2	3	0	39	0	14	7	2	72	1	7	0	0	150	2	16	3	0
7	2	7	2	40	0	15	0	0	73	1	7	4	2	160	3	0	0	0
8	3	0	0	41	0	15	4	2	74	1	7	9	0	170	3	3	9	0
9	3	4	2	42	0	15	9	0	75	1	8	1	2	180	3	7	6	0
10	3	9	0	43	0	16	1	2	76	1	8	6	0	190	3	11	3	0
11	4	1	2	44	0	16	6	0	77	1	8	10	2	200	3	15	0	0
12	4	6	0	45	0	16	10	2	78	1	9	3	0	210	3	18	9	0
13	4	10	2	46	0	17	3	0	79	1	9	7	2	220	4	2	6	0
14	5	3	0	47	0	17	7	2	80	1	10	0	0	230	4	6	3	0
15	5	7	2	48	0	18	0	0	81	1	10	4	2	240	4	10	0	0
16	6	0	0	49	0	18	4	2	82	1	10	9	0	250	4	13	9	0
17	6	4	2	50	0	18	9	0	83	1	11	1	2	300	5	12	6	0
18	6	9	0	51	0	19	1	2	84	1	11	6	0	400	7	16	0	0
19	7	1	2	52	0	19	6	0	85	1	11	10	2	500	9	7	6	0
20	7	6	0	53	0	19	10	2	86	1	12	3	0	600	11	5	0	0
21	7	10	2	54	1	0	3	0	87	1	12	7	2	700	13	2	6	0
22	8	3	0	55	1	0	7	2	88	1	13	0	0	800	15	0	0	0
23	8	7	2	56	1	1	0	0	89	1	13	4	2	900	16	17	6	0
24	9	0	0	57	1	1	4	2	90	1	13	9	0	1000	18	15	0	0
25	9	4	2	58	1	1	9	0	91	1	14	1	2	2000	37	10	0	0
26	9	9	0	59	1	2	1	2	92	1	14	6	0	3000	56	5	0	0
27	10	1	2	60	1	2	6	0	93	1	14	10	2	4000	75	0	0	0
28	10	6	0	61	1	2	10	2	94	1	15	3	0	5000	93	15	0	0
29	10	10	2	62	1	3	3	0	95	1	15	7	2	6000	112	10	0	0
30	11	3	0	63	1	3	7	2	96	1	16	0	0	7000	131	5	0	0
31	11	7	2	64	1	4	0	0	97	1	16	4	2	8000	150	0	0	0
32	12	0	0	65	1	4	4	2	98	1	16	9	0	9000	168	15	6	0
33	12	4	2	66	1	4	9	0	99	1	17	1	2	10000	187	10	0	0

* See Page 191.

Concerning Cyder and Perry.

THE Officer must frequently and carefully survey all the Makers of Cyder and Perry within his District; and must keep an Account of what Presses are at Work, and charge the said Liquors as the Law directs, EXCEPTING such as shall be used by Distillers for Distillation only. THE Officer must daily stock his Cyder-makers in Time of Working; and enter under its proper Number the Presses at Work, and the Depths and Contents of the Pumice Tubs, and on every Survey the Quantity of Pumice therein, viz. F, $\frac{3}{4}$, $\frac{1}{2}$, or $\frac{1}{4}$; and when any Cyder is returned on Pumice, he must immediately enter in his Minute-Book, the Time when, and the Number of the Cask, out of which the said Cyder was taken, with the wet Inches in their proper Columns. AND he must take Notice, that every Person that shall buy any Cyder or Perry, or any Fruit to make into Cyder or Perry, and shall sell any of the Cyder or Perry, so bought or made, by the Hoghead, or any greater or lesser Measure, is declared by the Law to be a Retailer of Cyder or Perry, and is chargeable with the Duties of such Cyder and Perry; and where he shall discover any Cyder or Perry to have been brought into his Division, that has not been charged by him, he is to enquire from whence it came; and if it shall not appear to him, that the Duties thereof have been charged and paid elsewhere, he is to charge all such Cyder or Perry, with the Duties ordained by Law. N. B. That Verjuice is to pay the Duty of 6 s. 8 d. only, which is to be charged when first made. AND the Officer must take Notice, that by a Clause in the Malt Act, 4 Geo. I. all Dealers in Cyder and Perry, and Persons receiving into their Custody, great Quantities of Cyder and Perry, are to permit him to enter into such Places, where the said Liquors are kept, to gauge and keep Stock of the same; and when any of the Stock shall be sold, he must charge such Part (as was before charged with 8 s. per Hoghead) with the Retail Duty of 6 s. 8 d. per Hoghead more; and in case such as has been charged with 4 s. only, shall not be sold, but removed by the Proprietor out of the Division where the same was first taken an Account of, in order to be disposed of elsewhere, the Officer must give the Proprietor a Certificate, signifying what Duty it has been charged with, before it was so removed.

When, and how
to be stocked.

All Dealers in
Cyder and Perry,
and receiving
large Quantities,
to permit the
Officer to take
an Account.

Officer to keep
Stock upon it,
&c.
When it is re-
moved out of the
Division for Sale.

The Rise and Progress of the Excise on Cyder and Perry.

TH^O we have entituled what follows the *Rise and Progress* of the Excise on Cyder and Perry; yet we must refer the Reader back for the *Rise* of the Excise on those Liquors, as they were *originally* interwoven with the Excise on *Beer and Ale*, on Page 250, &c. What farther relates to Cyder and Perry, is as follows.

1696. IN the Year 1696, it was ordained, That if any Maker of *Vinegar, Cyder, Metheglin, Mead, or Sweets* FOR SALE, should hide, conceal, or convey away any Vinegar, or Liquor prepared for Vinegar, or any Cyder, Metheglin, Mead, or Sweets, from the Sight and View of the Gauger, to defraud the King of any of the Duties due for the same, he should forfeit 40 s. for every Barrell of Vinegar, or Liquor prepared for Vinegar or Sweets; 40 s. for every Hogshedd of Cyder; and 5 s. for every Gallon of Metheglin or Mead, and so in Proportion for any greater or lesser Quantity of any of the said Liquors. AND it was then ordained, That if any Maker or Retailer of Vinegar, or if any of the Liquors aforesaid, upon due Request made by the Gauger in the Day-time, (or if by Night, then in the Presence of a Constable) should refuse to permit the Gauger to enter his House, or other Place used by him, and take an Account of any of the Liquors aforesaid, he should forfeit 15 l. for every Offence.

1697. AND in the Year 1697, it was ordained, That if any Maker of Cyder should deliver any Cyder to any Distiller or Vinegar-Maker without first giving Notice to the Gauger in whose Division he inhabits, what Quantity he intends to deliver, and when and to whom he intends to deliver the same, he shall forfeit 20 s. for every Barrell delivered without such Notice.

AND in the same Year, viz. 1697, for the avoiding Disputes in charging the Duties upon Cyder and Perry, it was ordained, That every Person who should buy any Cyder or Perry, or any Fruit to make into Cyder or Perry, and should sell, and of the Cyder or Perry so bought or made, by the Hogshedd, or any greater or lesser Measure, shall be deemed a Retailer * thereof, and shall be chargeable with the Duties for such Cyder and Perry so sold or bought for Sale.

1717. IN the Year 1717, it being notorious, That several Dealers in Cyder and Perry, and Persons receiving great Quantities thereof from distant or remote Places, had refused to permit the Officers to go into the Cellars, Storehouses, and Places used by them for the laying or keeping of such Cyder and Perry, to gauge and ascertain the Duties

* In the Year 1736 a Bill was brought in the Exchequer Court against a Person who retailed Cyder made from Fruit of his own Growth, and upon a full Hearing of the Matter, the Court declared, that all Persons who sold Cyder in any Quantity less than an Hogshedd, though it were from Fruit of their own Growth, were Retailers of Cyder within the Meaning of the Excise Laws, and were liable to the Duty of 10 s. 8 d. per Hogshedd. By the late Cyder Act. Any Person retailing Cyder made from Fruit of their own Growth, are now liable to the Duty of 14 s. 8 d. per Hogshedd.

Duties by several Laws imposed thereon; and that such Dealers in Cyder and Perry, and such other Persons on such Occasions, have insisted, that such Cyder and Perry ought not to be gauged, or taken Notice of, unless Proof were made of the respective Time and Places, when and where such Cyder and Perry were bought, when the Officer's producing such Proof is altogether impracticable, especially where such Cyder and Perry have been brought from Places remote: F O R removing such Doubts, it was then ordained, That every such Dealer and Persons as aforesaid, foreceiving into his or their Custody such Cyder and Perry, should be chargeable with the Duty of 4s. *per* Hogshead, unless they make it appear, that such Cyder and Perry was made of the Fruit of their own Growth, or that the Duty has been paid: And such Dealers or Persons as aforesaid, refusing to permit the Officer, in the Day-Time, to enter their Cellars and Storehouses, or other Place or Places belonging to, or used by them, as aforesaid, and to take an Account of their Cyder and Perry, shall forfeit 20*l.* for every Offence, to be sued for, recovered or mitigated, as any Penalty by any of the Excise Laws now in Force; and one Half to go to the King, the other Half to the Informer.

IN the Year 1743, it was ordained, That no Person or Persons should be chargeable with the Duty upon Cyder or Perry, 1743. such Person or Persons buying the same for his or their private Use only, and not being a Dealer or Dealers in Cyder or Perry, or a Retailer or Retailers thereof. AND, That after the 25th of March 1744, every Person or Persons whatsoever, who should sell any Quantity of Cyder or Perry, or either of them, in less Quantity than *twenty Gallons* at a Time, whether the same be made from Fruit of his, her, or their own Growth, or from bought Fruit, should be deemed and taken to be a Dealer in Cyder and Perry, and a Retailer thereof, and should be subject and liable to the Duty of 4s. *per* Hogshead, for such Quantity of Cyder and Perry so sold, *over and above all other Duties* payable for Cyder and Perry sold by Retail. AND that every Dealer in, and Retailer of Cyder and Perry, and other Person and Persons receiving into his, her, or their Custody, or Custodies, any Quantity of Cyder or Perry, or either of them, *for Sale*; and every Person and Persons who should buy any Fruit to make into Cyder and Perry, or either of them, for Sale, should make a true and particular Entry in Writing of the several and respective Store-houses, Rooms, Cellars, Vaults, and other Places by him, her, or them respectively made Use of, for the making or keeping of Cyder and Perry, or either of them, on Pain of forfeiting the Sum of 50*l.* for every such Store-house, Room, Cellar, Vault, and other Place made Use of by any such Dealer or Retailer, Receiver or Maker respectively, without making such Entry thereof as aforesaid.

The Rise and Progress of the Excise on Distill'd Spirituous Liquors will be found on Page 290,

The Rise and Progress of the Excise on Distill'd Spirituous Liquors will be found on Page 290,

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A Case

284 Cyder and Perry, at 6s. 8d. per Hogshead. Part II.

A Cash-Table for the *Excise* on CYDER, at 6s. 8d. per Hogshead, by the late Mr. *John Downer*, General Surveyor in the *Distillery*.

Gall.	s.	d.	f.	Gall.	s.	d.	f.	Gall.	s.	d.	f.
1	.	1	1.5	21	2	2	2.42	42	4	5	1.21
2	.	2	2.10	22	2	3	3.47	43	4	6	2.26
3	.	3	3.15	23	2	5	0.52	44	4	7	3.31
4	.	5	0.20	24	2	6	1.57	45	4	9	0.36
5	.	6	1.25	25	2	7	2.62	46	4	10	1.41
6	.	7	2.30	26	2	9	0.4	47	4	11	2.46
7	.	8	3.35	27	2	10	1.3	48	5	0	3.51
8	.	10	0.40	28	2	11	2.14	49	5	2	0.56
9	.	11	1.45	29	3	0	3.19	50	5	3	1.61
10	1	0	2.50	30	3	2	0.24	51	5	4	3.3
				31	3	3	1.29	52	5	6	0.8
11	1	1	3.55	32	3	4	2.34	53	5	7	1.13
12	1	3	0.60	33	3	5	3.39	54	5	8	2.18
13	1	4	2.2	34	3	7	0.44	55	5	9	3.23
14	1	5	3.7	35	3	8	1.49	56	5	11	0.28
15	1	7	0.12	36	3	9	2.54	57	6	0	1.33
16	1	8	1.17	37	3	10	3.59	58	6	1	2.38
17	1	9	2.22	38	4	0	1.1	59	6	2	3.43
18	1	10	3.27	39	4	1	2.6	60	6	4	0.48
19	2	0	0.32	40	4	2	3.11	61	6	5	1.53
20	2	1	1.37	41	4	4	0.16	62	6	6	2.58

Hhd.	l.	s.	d.	Hhd.	l.	s.	d.	Hhd.	l.	s.	d.	Hhd.	l.	s.	d.
1	.	6	8	21	7	0	0	41	13	13	4	61	20	6	8
2	.	13	4	22	7	6	8	42	14	0	0	62	20	13	4
3	1	0	0	23	7	13	4	43	14	6	8	63	21	0	0
4	1	6	8	24	8	0	0	44	14	13	4	64	21	6	8
5	1	13	4	25	8	6	8	45	15	0	0	65	21	13	4
6	2	0	0	26	8	13	4	46	15	6	8	66	22	0	0
7	2	6	8	27	9	0	0	47	15	13	4	67	22	6	8
8	2	13	4	28	9	6	8	48	16	0	0	68	22	13	4
9	3	0	0	29	9	13	4	49	16	6	8	69	23	0	0
10	3	6	8	30	10	0	0	50	16	13	4	70	23	6	8
11	3	13	4	31	10	6	8	51	17	0	0	71	23	13	4
12	4	0	0	32	10	13	4	52	17	6	8	72	24	0	0
13	4	6	8	33	11	0	0	53	17	13	4	73	24	6	8
14	4	13	4	34	11	6	8	54	18	0	0	74	24	13	4
15	5	0	0	35	11	13	4	55	18	6	8	75	25	0	0
16	5	6	8	36	12	0	0	56	18	13	4	76	25	6	8
17	5	13	4	37	12	6	8	57	19	0	0	77	25	13	4
18	6	0	0	38	12	13	4	58	19	6	8	78	26	0	0
19	6	6	8	39	13	0	0	59	19	13	4	79	26	6	8
20	6	13	4	40	13	6	8	60	20	0	0	80	26	13	4

Cyder and Perry, at 4s. per Hogshead.

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A Cash-Table for the Excise on CYDER, at 4s. per Hogshead, by the late Mr. John Downer, General Surveyor in the Distillery.

Gall.	s.	d.	f. ⁶³	Gall.	s.	d.	f. ⁶³	Gall.	s.	d.	f. ⁶³
1	.	.	3. 3	21	1	4	0. 0	42	2	8	0. 0
2	.	1	2. 6	22	1	4	3. 3	43	2	8	3. 3
3	.	2	1. 9	23	1	5	2. 6	44	2	9	2. 6
4	.	3	0. 12	24	1	6	1. 9	45	2	10	1. 9
5	.	3	3. 15	25	1	7	0. 12	46	2	11	0. 12
6	.	4	2. 18	26	1	7	3. 15	47	2	11	3. 15
7	.	5	1. 21	27	1	8	2. 18	48	3	0	2. 18
8	.	6	0. 29	28	1	9	1. 21	49	3	1	1. 21
9	.	6	3. 27	29	1	10	0. 24	50	3	2	0. 24
10	.	7	2. 30	30	1	10	3. 27	51	3	2	3. 27
				31	1	11	2. 30	52	3	3	2. 30
11	.	8	1. 33	32	2	0	1. 33	53	3	4	1. 33
12	.	9	0. 36	33	2	1	0. 36	54	3	5	0. 36
13	.	9	3. 39	34	2	1	3. 39	55	3	5	3. 39
14	.	10	2. 42	35	2	2	2. 42	56	3	6	2. 42
15	.	11	1. 45	36	2	3	1. 45	57	3	7	1. 45
16	1	0	0. 48	37	2	4	0. 48	58	3	8	0. 48
17	1	0	3. 51	38	2	4	3. 51	59	3	8	3. 51
18	1	1	2. 54	39	2	5	2. 54	60	3	9	2. 54
19	1	2	1. 57	40	2	6	1. 57	61	3	10	1. 57
20	1	3	0. 60	41	2	7	0. 60	62	3	11	0. 60

Hhd.	l.	s.	Hhd.	l.	s.	Hhd.	l.	s.	Hhd.	l.	s.	Hhd.	l.	s.
1	.	4	21	4	4	41	8	4	61	12	4	81	16	4
2	.	8	22	4	8	42	8	8	62	12	8	82	16	8
3	.	12	23	4	12	43	8	12	63	12	12	83	16	12
4	.	16	24	4	16	44	8	16	64	12	16	84	16	16
5	1	0	25	5	0	45	9	0	65	13	0	85	17	0
6	1	4	26	5	4	46	9	4	66	13	4	86	17	4
7	1	8	27	5	8	47	9	8	67	13	8	87	17	8
8	1	12	28	5	12	48	9	12	68	13	12	88	17	12
9	1	16	29	5	16	49	9	16	69	13	16	89	17	16
10	2	0	30	6	0	50	10	0	70	14	0	90	18	0
11	2	4	31	6	4	51	10	4	71	14	4	100	20	0
12	2	8	32	6	8	52	10	8	72	14	8	200	40	0
13	2	12	33	6	12	53	10	12	73	14	12	300	60	0
14	2	16	34	6	16	54	10	16	74	14	16	400	80	0
15	3	0	35	7	0	55	11	0	75	15	0	500	100	0
16	3	4	36	7	4	56	11	4	76	15	4	600	120	0
17	3	8	37	7	8	57	11	8	77	15	8	700	140	0
18	3	12	38	7	12	58	11	12	78	15	12	800	160	0
19	3	16	39	7	16	59	11	16	79	15	16	900	180	0
20	4	0	40	8	0	60	12	0	80	16	0			

Concerning the Business and Duty of those Officers of the Excise, who survey Distillers; so as to prevent their evading the Duty, or defrauding the Revenue.

The Officer's Duty where he resides.

How oft, and in what manner he must visit the Traders,

Must endeavour to detect Frauds,

What must be done each Survey.

WHERE the Officer resides, he must survey Distillers at *least once a Day*, notwithstanding they are *silent*, or even if there is no Wash depending. And those who are at work, or where he finds there is Wash of any Kind preparing for Distillation, he must visit the Distiller *from two to five Times a Day*, if there be a Necessity for it; and his Returns upon them must not be at fix'd Hours, but at uncertain Times of the Day; nor must he survey in a hasty or careless Manner, but with due Care and Circumspection, so as to prevent his being imposed upon. And he is to observe, that the Nature of the Distillers Trade is such, that those who have Wash preparing or prepared, must be surveyed on a *Sunday*, at *least once*.

It must always be the Officer's Endeavour to find out all *private Backs*, or *Wash* that is *concealed**, and to endeavour to discover whether any Distiller sets his Stills at work, or *privately* carries out Low Wines or Spirits, or at *unlawful Hours*† without giving due Notice; or if he is guilty of any other unlawful Practices.

The Officer must take an Account of all the Materials fit for Distillation *every Time* he surveys, also of what Stills are at work, and what they are charged with; and must before he leaves the House, enter the same in his Book. (*Note*, The *Minute-Books* formerly enjoined, are no longer to be made use of.) And he must enter the Time of every Survey he makes upon a *Minute-Paper*, which is to be left in the Work-house of each Distiller. The Officer must fix in his Book all the *Wash-Backs* that belong to each Distiller; he must also gauge the Wash he finds in the Back; and this he must do by taking the *dry Inches* to *half an Inch*; which must be cast up by Tables prepared for that End. The Officer must be careful to observe not only the *Quantity* but the *Quality* of all *Wash* and *Low Wines*, &c. for which Purpose he must be always provided with a *Viol*, and must use his utmost Endeavour to find out what those Materials are that all Wash is made of, or how mixed by the Distiller.

The Characters for denoting the Quality of Wash, are

Characters to signify the Quality of the Wash.

B. For Brewers Wash or Tilts.
C. For Cyder or Perry.
F. For Foreign Fruits.
G. For Malt.
L. W. For Low Wines.

M. For Melasses.
S. W. For Sugar Water.
S. For Scums.
W. For Wine.

N. B. And in *Stocking* any Exciseable Liquors, write (F) to a full Cask or Vessel; and (oo) to an empty one. AND when the *wet* or *dry Inches* are *even*, and *less than 10*, you are to place a Cypher *before* and *after*, thus, 09.0; and if *more than 10*, only *after* them, thus, 610.; and if *less than one Inch*, thus 005, where your Columns will admit of it; or there is Room to alter your true Gauge by *preponing* or *postponing* any Figure.

* See Chap. VII. Page 290 throughout.

† See Page 208.

The Officer, at the setting of each Back, must place a *proper Character* over his Gauge of the Wash, to denote of what kind it is; and if at any Time he finds it *mix'd* with other Materials of a *higher Duty*, it must be titled accordingly; and the *proper Character* must be put over the *Decrease* of Wash set out in the Column for that Purpose; and he must charge the *Low Wines*, and *Spirits* drawn from the several Sorts of Wash, as the Law directs *. The Officer when any *By Casks* of Wash are brought into any Distiller's Custody, must enter in a Column for that Purpose the *Number* of them against each Survey, and a Stock must be taken daily of every *Cask* distinctly in the most convenient Part of his *Stock-Book*, and he must put the *proper Characters* over the *first Stock* of each such Cask. The Officer, when he finds any *Decrease* of *Melasses Wash*, must charge the Distiller with so much *Low Wines*, or *Spirits* of the *first Extraction*, as a *fourth Part* of the said Wash decreased shall amount unto; and with so much *proof Spirits* of the *second Extraction*, as *two third Parts* of the *fourth Part* of Wash decreased shall amount unto: But in case he finds that his Gauge of *Spirits*, or of *Low Wines*, does exceed that *Quantity*, he must make his Charge from his Gauge, and this he is to do as follows.

☞ He must set out, in the Columns for that Purpose, the *Quantity of Wash* decreased each Day, and likewise, the *Quantity of Low Wines* he finds drawn from it, and he must make his Charge of *Low Wines* either from one *fourth Part* of the *Decrease of Wash*, or from his Gauge of the *Low Wines*, whichever of them is best; and if one *fourth Part* of the *Wash* amounts to more than his Gauge of the *Low Wines* drawn from it, he must set forth the *Difference* in the Column for the *Decrease of Low Wines*, and write over against it *pre. to* shew that he presumes so much *Low Wines* is drawn and decreased more than he has got an Account of, and *two Thirds* of that *presumed Quantity* he must charge into *Spirits*. And if there be any *Low Wines* distilled that Day, the Officer must add the *Quantity of Low Wines* he actually finds decreased, and the *presumed Decrease* together, and charge *two Thirds* of the *Total* into *Spirits*; except it be exceeded by his Gauge of *Spirits*, and in such Case he must observe to charge from his Gauge.

The Officer must observe the same Method in making his Charges from Wash made of *Corn* or *Cyder*, with regard to their *respective Proportions* granted by Law, *i. e.* A *fourth Part* of the *Decrease* of *Malt Wash* must be charged into *Low Wines*, and *three fifth Parts* of that *fourth* must be charged into *Spirits*.

And one *fifth Part* of the *Decrease* of the Wash of *Cyder* or *Perry* is to be charged into *Low Wines*, and *Half* of that *Cyder* *Fifth* is to be charged in *Spirits*. Nevertheless, in either

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Case,

* See Page 293, 294, &c.

Must characterize the Wash in each Back, and the Decrease.

Of By-Casks.

How to charge any Decrease of Melasses Wash.

This must be carefully attended to.

Of Wash from Corn.

Of Wash from Cyder.

Case, if his Gauge of Low Wines or Spirits exceed the above-mentioned Proportions, he must charge from his Gauge.

[The Officer is to observe, that by an Act passed in the third of George II. any Distiller, who shall receive any Quantity of Cyder or Perry into his Custody, must give Notice in Writing to the Officer forty-eight Hours before any Quantity of the same shall begin to be put into any Still, on Penalty of Five Pounds.]

What is to be observed where the Law has not settled the Proportion to be charged for Decrease.

What Corn is brewed for Distillation.

No Tilts, &c. to be delivered or received without Notice.

Of mixed Wash.

The Officer is to observe, That the Law has not settled what Proportion is to be charged from the Decrease of any other Wash, or other Materials prepared for making of Low Wines or Spirits, i. e. Sugar-Water, Foreign Fruits, Foreign Wines, Scums, &c. Therefore when the Officer finds any of these Materials preparing, or prepared, he must satisfy himself of the Strength of it, the better to prevent his being imposed on by the Distiller; for which Reason, were it is possible, it is requisite he, or some other Officer or Assistant, should attend the working off the same, to see and observe its Produce, or attend one Still of a Back at least, and charge the rest of it to that Back, according to such Produce. Whenever the Officer finds any such Wash, &c. missing, (i. e. such whose Length of Low Wines and Spirits the Law has not ascertained,) and of which he had got an Account of at any Time not exceeding twenty-four Hours before; and if he shall not, on Demand, receive Satisfaction what is become of the same, in such Case, the Officer must charge the Distiller with so much Low Wines and Spirits, as such Wash or Liquor so missing would, to the best of his Judgment, reasonably have produced; and therefore the Officer must never fail having one or more Gauges of such Wash every twenty-four Hours. The Officer, when he has in his Survey a Distiller who brews Corn for Distillation, be it malted or unmalted, he must be careful to examine the Coolers after the Brewing is over, and take Care to have a Gauge of all the Worts or Wash he distils. He must also take a Gauge of each Brewing, that he may compare the same with the Quantity of Wash made therefrom; and he may reasonably expect from a Quarter of Malt about three Barrels, or one Hundred and thirty-two Gallons Wine Measure; and so, in Proportion, for a greater or lesser Quantity.

The Officer must observe, that no common Brewer, or Maker of Cyder, is to deliver any Cyder, Ale, Beer, Vinegar Beer, Tilts, or Wash, to any Distiller, or Vinegar-Maker, without first giving the Officer Notice, on Pain of forfeiting twenty Shillings for every Barrel of such Liquors delivered without Notice given. Nor is any Distiller to prepare or receive any Wash from Melasses, or other Materials, until he has drawn off and distilled all the Liquors made or prepared from Corn.

The Officer, in Case any Distiller mixes Spirits from malted Corn with Melasses Wash, or Wash from any foreign Materials,

rials, he must charge all the Low Wines drawn from it, as Low Wines drawn from *Foreign Materials*. But if such Mixture hath any *Melasses* in it, he must charge *one Fourth* into *Low Wines*, and *two Thirds* of that into *Spirits*.

[N. B. All Spirits, drawn from a Mixture of Spirits with any Kind of Wash, or other Liquors, except common Water, are to be charged as Low Wines drawn from Foreign Materials.]

The Officer must be very careful when he finds a Still charged, that he is not imposed upon, by a Pretence that they are *rectifying*; and either then, or at any other Time, when he finds a Still charged, if he has cause to suspect a Fraud, he must examine what Materials are in such Still, by taking off the Head of it, if it be not at Work; but if it be at Work, he must stay till it shall be wrought off, and then examine what is in it. 'Tis requisite, when he has an Opportunity, to take a Gauge of the Wash in the Still, in order to compare the same with the Quantity gone out of the Backs. When the Officer is on his Survey, if he finds a Distiller at work, he must enter his Name and Time of his Survey at the End of his Book, with the Number of each Still that is at work, denoted with the proper Character, to shew what each is charged with; and he must transfer those Remarks into his Journal.

What is to be done where a Still is found charged.

And the Officer, when he finds any Still charged, he must enter, in the proper Column, a Character to denote what it is charged with.

The Characters to be made Use of are as follows.

1. A. For Wash.
2. B. For Low Wines to be made into Spirits.
3. R. When rectifying of Spirits.
4. R. L. After-Runnings of Low Wines.
5. X. For Strong Waters.

Wash, &c. how to be characterized.

The following Characters, and no other, must be made Use of to shew in what Condition the Officer leaves a Still.

1. O When not come down.
2. V Newly come down.
3. — About half off.
4. A Near off.
5. Off. When quite off.

Condition of the Still, how to be characterized.

N. B. The Officer is to enter, in a Scheme, the Contents of every Distiller's Entry in the Front of his Book.

See the Tables for casting up these Duties at the End of Ch. VII.

C H A P. VII.

Shewing the Rise and Progress of the Excise on Distill'd Spirituous Liquors.

SOME Part of the *Distiller's* Duty being originally interwoven with that of the *Brewer's*, it is requisite that should be likewise consulted. (See Page 250.) In the Year 1689, it was ordained, That if after the

1689. 20th Day of *July*, any *Distiller*, or *Maker*, of any *Low Wines*, after the *Gauger* hath taken an *Account* of his *Low Wines*, should sell, dispose of, or remove the same, or any Part thereof, without drawing it off a second Time, he should forfeit five *Shillings* for every *Gallon*, to be recovered as any other Penalties are by the *Excise Laws*. AND it having been found, that the *Payment* of the *Duties* upon *Strong Waters*, *Aqua Vitæ*, and *Spirits* had been much avoided, by reason that the *Officers* were not duly permitted to enter into the *Distil-house*, and other *Places* belonging to, or used by the *Distillers*, or *Makers* of the *aforsaid Liquors*, by which means the *Penalties* formerly imposed were avoided; because the *Officers* could not make *Proof* that there had been any *Sale* made of their *Goods* before the *Duty* was paid; for *Remedy* of which it was then ordained, That if any *Distiller* should, (upon *Demand* made by the *Officer*, in the *Day-time*, or if it be in the *Night-time*, in the *Présence* of a *Constable*) refuse to permit the *Officer* into his *Distilling-house*, or any other *Place* belonging to, or used by him, he should incur the *Penalties* imposed and inflicted by the *Excise Laws*, without the *Informer's* being obliged to prove, that the *Distiller* had sold or disposed of any Part of his *Goods* before he had paid the *Duty* for the same.

TWO Years after, viz. *Anno* 1691, for the better collecting
1691. the *Duty* upon *Low Wines* and *Strong Waters*, and preventing the *Abuses* therein, it was ordained, That no *Maker* of *Low Wines*, *Spirits*, or *Strong Waters* for sale, should after the first Day of *March* 1691, set up, make use of, or alter any *Still*, or other *Vessel*, for the brewing or making of any *Worts*, *Wash*, *Low Wines*, or *Spirits* for *Sale*; or keep, or make use of any private *Store-house*, or concealed *Place*, without he first gives Notice at the next *Excise-Office*, under the *Penalty* of 20*l.* for every *Still*, *Copper*, *Tun*, or other *Vessel*, so set up, used, or altered; and for every private *Warehouse*, *Store-house*, or concealed *Place* so made use of: AND that every *Person* in whose *Occupation* any *Place* whatsoever is, or should be, where any concealed *Still*, *Copper*, *Tun*, *Cask*, *Wash-Batch*, or other *Vessel* should be discovered, should likewise forfeit 20*l.* one Half to the *King*, and the other Half to the *Informer*: AND that, if any common *Distiller* should hide, or convey any *Low Wines*, *Spirits*, or *Strong Waters*, out of the *Sight* or *View* of the *Officer*, to avoid paying the *Duty*, he should forfeit for every *Gallon* the Sum of 5*s.*

FIVE Years after, viz. *Anno* 1696, for the preventing *Frauds*
1696. and *Abuses* committed by *Distillers*, it was ordained, that all *Distillers* should draw their *Low Wines*, *Brandy* or *Spirits* of the first *Extraction* from *Drink* made of malted *Corn* entirely, without any *Mixture* of other *Materials* whatsoever; and that the *Officer* should keep an *Account* of the *Drink*, *Worts*, and *Liquors*, prepared by *Distillers* for making such *Low Wines*; and in case he finds any other *Materials* mixed with
Malt-

Malt-Drink, either in the Brewing, or otherwise, he shall charge the Low Wines drawn from the Drink so mixed, with the Duty of 12d. per Gallon. AND that no Malt Distiller should receive, or prepare any Wash from Melasses, or other Materials, until he had drawn off all the Liquors made from Corn, on Pain of forfeiting 5l. for every Barrel of such Liquor made of Corn found undistilled, or drawn into Low Wines as aforesaid. BUT if any Officer, knowingly, shall charge any Low Wines as if it were made from malted Corn, when in fact it is not, such Officer shall not only forfeit 10s. for every Gallon of Low Wines so injuriously charged, but be disqualified for exercising his Employment. AND to encourage the Distillers to draw Spirits or Brandy from malted Corn, not mixed with any other Materials, they are allowed a Drawback of 3d. a Gallon on Exportation. [See Ch. XX. §. IX.] IF any Officer shall find any Quantity of decayed Wines, Cyder, or other Materials fit for Distillation, or preparing for it, in the Custody of any compound or rectifying Distiller, and is apprehensive that the Distiller may extract Low Wines from it, and if the Officer finds any Still charged or prepared to work, he may take off the Head of such Still, (provided it be not actually at work, to examine what Materials it is charged with; and if the Still is at work) he may stay in the Distilling-house till it is wrought off, and then examine what it was at work on; and if the Distiller should refuse to let the Officer stay in his Distilling-house, and to examine his Still as aforesaid, such Distiller shall forfeit 20l. for every Offence. AND after *Lady-Day* 1697, all Stills and other Utensils used by such Distiller, or other Person, for distilling for Sale or Exportation, shall be liable to all Arrears of Excise, into whose Hands soever they shall come, or by whatsoever Conveyance or Title they shall be claimed; and the Debts and Penalties may be levied, in all Cases, against such Utensils as if the Offender was real Owner thereof. AND all Materials prepared, or preparing for Distillation, and also all Low Wines, Spirits, or Strong Waters found in any Store-house, or Vessel, used by any Distiller, the Officer shall take an Account of, and if he shall miss any Wash, made from Corn or other Materials, for making Low Wines, which he found or gauged within 24 Hours before, he may charge such Distiller with so much Low Wines as such Wash or other Materials would reasonably have made, if he receives not, on Demand, Satisfaction what is become thereof. AND for the more effectual securing the Duties on Low Wines, Strong Waters, Aqua Vitæ, and Spirits, it was ordained, That no Distiller should set his Stills at work for the making any of the said Liquors, or should deliver or carry out any of the said Liquors, but betwixt the Hours of Five in the Morning and Eight at Night, from the 29th of *September* to the 25th of *March*, and between the Hours of three in the Morning and nine at Night, from the 25th of *March* to the 29th of *September*, without first giving Notice to the proper Officer; and every Distiller offending therein, shall forfeit 10l. for every such Offence.

THE very next Year *Anno* 1697, since the Penalties to which Distillers have been subjected had been found insufficient to prevent Frauds, it was then ordained, That if any Distiller, after the 10th of *April* 1697, should set up any Copper, Still, Tun, Cask, Wash-Batch, or other Vessel; or if he should alter or enlarge any such Tun or Vessel already set up; or if he should keep or have any Copper, Still, Tun, Cask, Wash-Batch, or other Vessel; or if he should have or keep any private Warehouse, or other Place for the keeping, brewing, or making any

any Wash, Worts, Low Wines, or Spirits, without first giving Notice at the next Excise-Office, he should forfeit for every Copper, Still, Tun, Cask, Wash-Batch, Warehouse, or other Place so set up, altered or enlarged, kept private or concealed, the Sum of 20*l*. And for every such private Copper, Still, Tun, Cask, Wash-Batch, Warehouse, or other Place, found in the Possession of any other Person, such other Person should likewise forfeit the Sum of 20*l*. AND for the avoiding Disputes, it was ordained, That any Person making or having in his Possession any Cyder, Wash, or other Materials fit for Distillation, and having any Still or Stills containing 20 Gallons or more, in his Possession, should be deemed a common Distiller for Sale, and should be liable to the Duties and Penalties inflicted by the Excise Law. AND these Fines and Penalties to which Offenders were then made liable, are to be recovered either by the Excise Laws, or in any Court of Record at *Westminster*, and to be applied one Half to the King, and the other Half to the Informer. AND it was then declared, That it should be lawful for any Person who had or should set up any Works or Offices, and give Notice thereof within ten Days after the entering such Office or Work, to distil for Sale, or to be retailed, Low Wines or Spirits from malted Corn or Cyder, and to rectify any such Spirits of their own making only, provided they pay the Duties, and are subject to such Fines and Penalties as other Distillers are, notwithstanding any Law, Charter, or other Thing to the contrary.

THE next Year after, viz. Anno 1698, for preventing Frauds committed by Distillers, and others who keep private and concealed Ware-houses, Store-houses, or other Places, or having private or concealed Stills, Backs, or other Vessels or private Pipes, Stop-Cocks, and other private Conveyances, it was ordained, That every Distiller should demolish all private Pipes and Conveyances, and stop up all Holes in his Back or Wash-Batch before the 28th of February 1698; and after that Time, if he made use of any such, he should forfeit for every such Pipe, Stop-Cock, Conveyance, or Hole 100*l*. And the Officer is empowered to search for such Pipes, and to follow them, &c. as in the Case of Brewers, which see on Page 259. But any Distiller may use public Pipes for letting his Wash or Worts out of one public Vessel into another. AND if the Gauger or Officer has Cause to suspect that there is any private or concealed Still, Back, or other Vessel, Wash, Low Wines, Spirits or other Materials, preparing for Distillation, kept in any House or Place, and makes Affidavit thereof before a Justice of the Peace, setting forth the Grounds of his Knowledge or Suspicion, by Virtue of a Warrant from the Justice, he may then, in the Day-time, and in the Presence of a Constable, break open the Door, or any Part of such House or Place, and enter and seize the Vessels and Goods found therein, and keep them in such Place where they were found; and in case they are not claimed in twenty Days next after Seizure, by the true Owner, then the said Vessels and Goods found therein shall be absolutely forfeited, and may be sold at the next general Day of Sale, which should be appointed by the Commissioners or their Officers, after the Expiration of the twenty Days; but there must be an Adjudication of the Forfeiture before there can be a Sale; and after Charges have been deducted out of the Produce thereof, one Half to go to the Crown, and the other Half to the Informer. AND that if any such Vessels or Goods, so found, should be claimed within the 20 Days, the Person claiming the same shall forfeit 200*l*. for every Warehouse, or other Place, in which any Back or other Vessel should be found, and likewise for every Still, Back,

Back, and other Vessel found therein; but if on the contrary no private or concealed Back, Still, or other Vessel, Spirits, Low Wines, Wash, or other Materials for Distillation should be found, the Gauger should make good the House so broken up, or make such Satisfaction as two of the next Justices, one being of the *Quorum*, should adjudge; or the Party may bring his Action at Law for his Damage, which is to be paid out of the Revenue of Excise. AND it was ordained, That if any Distiller, or any other Person should oppose the Officer or Gauger in the due Execution of these Powers given him, he should forfeit the Sum of 200*l.* to be recovered by any Laws of Excise then in Force; one Half to go to the King, the other Half to the Informer. SINCE Distillers, under Pretence of rectifying of Spirits, do frequently mix Spirits with Wash, and other Liquors, and afterwards distil the same, it was declared, That all Spirits drawn from any Mixture of Spirits with any kind of Wash or other Liquor, (except common Water) should be esteemed to be Low Wines, and be chargeable with the Duties imposed upon Low Wines drawn from foreign Materials.

THE very next Year, viz. Anno 1699, it having been discovered that any Quantity of Wash made of Melasses, will, upon Distillation, produce $\frac{1}{4}$ th Part of the same Quantity into Low Wines, or Spirits of the *first Extraction*; and that such Low Wines, or Spirits, upon the *second* Distillation, will produce $\frac{2}{3}$ Parts of the Quantity of the same Low Wines, or Spirits, into proof Spirits, or Spirits of the *second Extraction*: AND because it had been found, that Distillers frequently concealed large Quantities of these Low Wines and Spirits, before the Gauger has charged the same, and so defraud the Revenue of the Duties such Low Wines and proof Spirits are liable to; to remedy which, it was ordained, That after the 10th of May, 1699, the Gauger should keep an Account of all Melasses Wash found in the Hands of any Distiller; and when he finds any Decrease thereof, he should charge the Distiller with so much Low Wines of the first Extraction, as $\frac{1}{4}$ Part of the Wash so decreased should amount unto, and likewise with so much Proof Spirits, or Spirits of the second Extraction, as $\frac{2}{3}$ Parts of the Low Wines, or Spirits of the first Extraction, charged as aforesaid, should amount to; and the Distiller must pay the Duties of the Low Wines and Spirits accordingly. IT having been formerly ordained, (Anno 1698) that every private Still, Back, or other Vessel should be seized, and that the Owner of such Still, Back, and other Vessel, claiming the same within twenty Days after such Seizure, should forfeit 200*l.* for every such Still, Back, and other Vessel*; and whereas it has been doubted, whether the Owners of such Stills, Backs, &c. by refusing to claim them within twenty Days, may not avoid the said Penalties; in order to clear up that Matter, it was ordained, that after the 10th of May 1699, the Proprietor, or the Person in whose Custody the Utensils should be found, should forfeit the said Penalty of 200*l.* for every such Still, Back, and other Vessel.

TWO Years after, it was ordained, That after the 24th of June 1701, no Information against any Distiller should be laid or prosecuted, unless it were within three Months after the Offence committed; and the Distiller must have Notice given him, or left at his House within a Week after the Information is laid, that a timely Provision may be made for his Defence. AND it was likewise ordained, That no Persons should sell Brandy, or Spirits by retail, to be drank in their Houses, without such Licence † as Alehouse-keepers have, and being subject to the same

* See Page 292.

† See Page 97, 299.

same Penalties and Forfeitures as Victuallers selling without a Licence. And the Justices and other Officers have the same Power given them over such Retailers of Brandy or Spirits, as they have over common Alehouse-keepers.

FIVE Years after, *viz.* Anno 1705, it having been discovered, 1705. that any Quantity of Wash made of Drink brewed from *malted or unmalted* Corn, will produce, upon Distillation, $\frac{1}{4}$ Part of the same Quantity into Low Wines of the *first* Extraction; and that such Low Wines, upon the *second* Distillation, will produce $\frac{3}{4}$ th Parts of the Quantity of the same Low Wines or Spirits, into Proof Spirits, or Spirits of the *second* Extraction: AND it having likewise been found, that any Quantity of Wash made of Cyder or Perry, will produce $\frac{3}{4}$ th Part of the same Quantity in Low Wines, or Spirits of the first Extraction: and that the same Low Wines, or Spirits, upon the *second* Distillation, will produce $\frac{1}{2}$ Part of the Quantity of the same Low Wines, or Spirits into Proof Spirits, or Spirits of the *second* Extraction; AND whereas Distillers have concealed great Quantities of such Low Wines and Spirits from the Sight of the Gauger, before he can come to take an Account of the same; to remedy which, it was ordained, That after the 25th of *March*, 1705, the Gauger should keep an Account of the said several sorts of Wash in the Hands of any Distiller; AND upon any Decrease of such Wash made from the malted or unmalted Corn, should charge $\frac{1}{4}$ Part of such Wash so decreased, as Low Wines, and $\frac{3}{4}$ of such Low Wines as Proof Spirits: AND upon any Decrease of Cyder or Perry Wash, the Gauger should charge $\frac{1}{2}$ of such Decrease as Low Wines, and one $\frac{1}{2}$ of such Low Wines as Proof Spirits.

TWELVE Years after, for preventing Frauds in the Duties on 1717. Low Wines and Spirits carried Coast-wise, it was ordained, That after the 5th of *June*, 1717, all Low Wines, or Spirits brought by Sea Coast-wise from any Port or Place in this Kingdom, to any other Port or Place in this Kingdom, without a Certificate from the proper Officer of Excise where the same were made, shewing that the Duty thereof hath been paid, should be forfeited; and should be seized by any Officer of the Customs or Excise of the Port or Place where the same should be brought in; and is to be distributed one Half to the Crown, and the other Half to the Person, that shall inform, or sue for the same.

THREE Years after, all Distillers, or Dealers in Brandy, Arrack, Rum, Strong Waters or Spirits, let them be *British* or 1720. *Foreign*, either by *wholesale* or *retail*, were enjoined to enter by the first of *August*, 1720, at the next Excise Office, all their Warehouses, Store-houses, Rooms, Shops, Cellars, Vaults, and other Places used by them for the keeping of Brandy, Arrack, Rum, Spirits, or Strong Waters, either *British* or *Foreign*, for Sale; and also all the Brandy, Arrack, Rum, Spirits, and Strong Waters, *British* and *Foreign*, which should be therein at the Time of making such Entries, upon Pain of forfeiting 20*l.* for every Place so made use of, without making Entry thereof, together with all the Brandy, Arrack, Rum, Spirits, and Strong Waters, which should be found therein, and also the Casks and Vessels in which the same is contained: AND all other Persons who should become Distillers, or Dealers in any such Brandy, Arrack, Rum, Spirits, or Strong Waters, after the first of *August* 1720, were enjoined to make the like Entry of their Warehouses, and other Places intended for the keeping of Brandy, Arrack, Rum, Spirits, or Strong Waters, either *British* or *Foreign* before they take into their Custody or Possession any of the said Liquors, under the Penalty of 20*l.* for every Warehouse or other Place, without making Entry

Entry as aforesaid, together with all the Brandy, Arrack, Rum, Spirits, and Strong Waters which shall be there found, and also the Casks and Vessels in which it shall be contained. AND no Brandy or Spirits, either *British* or Foreign, shall be brought into such Warehouses or other Places, without giving Notice to the Officer, and producing a Certificate or Permit, setting forth the Quantity and Quality of such Liquors, and that the Duties have been paid; or that they have been condemned as forfeited; or that they were Part of the Stock of some Importer, Distiller or Dealer in Brandy, of which a legal Account had been taken by the proper Officer, upon Pain of forfeiting the same, together with all the Casks and Vessels in which it is contained. AND the Excise Officers may enter such Warehouses and other Places, by Day or by Night, (but if in the Night, it must be in the Presence of a Constable) to take an Account of the Quantity and Quality of the said Liquors; and every such Distiller or Dealer, who shall hinder or refuse the Officer to enter such Warehouse, Shop, or other Place, or to take an Account of the Goods therein, forfeits 50*l.* for every such Offence. IT was farther enjoined, That after the said first of *August*, no Brandy, Arrack, Rum, Spirits, or Strong Waters, either *British* or Foreign, should be sold, or exposed to Sale, but in such entered Places, upon Pain of forfeiting 40*s.* for every Gallon *, and so in Proportion for a greater or lesser Quantity. OFFICERS are required, upon Request of the Seller (of all such Brandy, Arrack, Rum, Spirits, or Strong Waters, as aforesaid, sold in such entered Places) to give *Certificates* or *Permits* to the Buyer of the Quantities so sold, and that the Duty has been paid, to prevent the seizing thereof by the Officer of the Division to which it is intended to be carried. AND it was farther enjoined, That no Brandy, Arrack, Rum, Spirits, or Strong Waters, exceeding one Gallon, should be moved by Land or by Water, without such Permit or Certificate as aforesaid, upon Pain of forfeiting the said Liquors, and the Casks in which they are contained. AND every Person who shall have in their Custody any Brandy, Arrack, Rum, Spirits, or Strong Waters, exceeding the Quantity of 63 Gallons, shall be deemed and taken to be a Seller and Dealer in these Goods, and subject to the Survey of the King's Officer. AND these Penalties and Forfeitures are to be sued for, or mitigated, by the same Ways and Methods as any Penalty by any of the Laws of Excise may be levied or recovered: And after the Charges of recovering the Penalty is deducted, one Half of it shall go to the King, the other Half to the Informer. AND to encourage the Officers of the *Excise* and *Custom* to seize such Brandies, or other Liquors as shall be clandestinely imported, it was enjoined, that all Seizures made of any Brandy, Arrack, Rum, Spirits, or Strong Waters, *British* or Foreign, within the Bills of Mortality, in pursuance of any Law (except where the Seizure is made for *unlawfully importing*, and exceeds 63 Gallons) shall be heard and examined, in a summary Way, by the Commissioners of Excise, or the major Part of them; but if such Seizure is made out of the Limits of the chief Office of Excise, *i. e.* out of the Bills of Mortality, then such Seizures shall be examined and determined, in a summary Way, before any two Justices of the Peace residing near to the Place where such Seizure was made; who are empowered to summon the Party in whose Custody the Goods were found; and upon the Appearance or Default of the Party to proceed to give Judgment for the Condemnation of such Goods, together with the Cask and other Vessels in which they are contained; and such Judgments are declared to be valid

* See Page 186.

† See Page 306.

valid and final, and not liable to any Appeal, or Writ or *Certiorari*. AND in all Cases where such Brandy, Arrack, Rum, Spirits or Strong Waters shall be seized as forfeited (except as before excepted,) and no Person shall appear to the Officer who made the same within 20 Days next after such Seizure, if such Seizure was made within the Bills of Mortality, Notice shall be fixed up at the *Royal Exchange* of the Day, and Time of the Day, when the Commissioners will proceed to enquire into the Cause of the Seizure, and to the Condemnation of such Brandy, Arrack, Rum, Spirits or Strong Waters seized as aforesaid, and of the Casks and other Vessels containing the same. AND if such Seizure was made out of the Bills of Mortality, and no Claim is made within twenty Days, Notice shall then be given by Proclamation at the next Market-Town to the Place where the Seizure was made, upon the next Market-Day after the Expiration of the said twenty Days, when and where the Justices of the Peace will proceed to hear the Cause of such Seizure, and to the Condemnation of such Goods as aforesaid; and such respective Judgments of the Commissioners of Excise, and Justices of the Peace, shall be good, valid, and effectual in Law, and final to all Intents and Purposes whatsoever, as if the Owner of such Goods, or the Person or Persons in whose Custody they were found, had been summoned; and no Appeal or *Certiorari* shall be admitted of.

THE next Year after, *viz.* Anno 1721, to clear all Doubts concerning the seizing of such Brandy, Arrack, Rum, Spirits, and Strong Waters, as well *British* as *Foreign*, and also of such *Foreign* Exciseable Liquors as are declared to be forfeited, it was ordained, 1721. That the said Liquors which have been, are, or hereafter should be forfeited by Virtue of any Law then in being, or that should be made, together with the Casks, Bottles, or other Package containing the same shall and may be seized by any Officer of the *Excise* or *Customs* respectively, or by any Person duly authorized, but by no other Person whatsoever. AND after the 25th of March 1722, all Persons resisting any Officer of the Excise or Customs in the due seizing of any Brandy, Arrack, Rum, Spirits, or Strong Waters, either *British* or *Foreign*, or any *Foreign* Exciseable Liquor, or rescuing, or causing to be rescued the same, after it has been seized, or who should endeavour at or after such Seizure to save, or destroy the Cask, Vessel, or Bottle containing the same, should forfeit 40*l.* for every such Offence. And if any one for having done his Duty in relation to the Premises is molested, he may plead the general Issue, and give the special Matter in Evidence, and he shall recover treble Costs.

ABOUT three Years after, Anno 1724, it was ordained, That 1724. after the 24th of June, 1725, no Brandy, Arrack, Rum, Spirits, or Strong Waters, whether *British* or *Foreign*, should be sold or exposed to sale, but in an entered Place, upon Pain of forfeiting the same, and the Casks, Bottles, or other Vessels containing the same, over and above the Penalty formerly imposed of 40*l.* per Gallon *.

SIX Years after, *viz.* Anno 1730, it was ordained, That no Cy- 1730. der and Perry sold to any Distiller, or Maker of Strong Waters to be used for distilling only, should be chargeable with the Duty of 4*l.* per Hogshead. EVERY Distiller receiving into his Custody any Quantity of Cyder or Perry after the 24th of June, 1730, is enjoined to give 48 Hours Notice in writing to the Officer who surveys him, before he begins to put any Quantity whatsoever of the same in the Still, to be

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* See Page 185.

drawn into Low Wines or Spirits; and if he shall neglect or omit to give the Officer such Notice, or if he shall dispose of or make use of any Part of such Cyder or Perry but in Distillation only, he shall forfeit 5*l.* to be recovered and mitigated as other Fines and Penalties against any of the Laws of the Excise.

THREE Years after, viz. *Anno 1733*, it was ordained, That if any Person shall hawk, sell, or expose to sale, Brandy or Strong Waters, after the 24th of *June, 1733*, about the Streets in any Wheel Barrow, or upon the Water in any Ship, Boat, or Vessel, or in any other Manner whatsoever; or should sell, or expose to sale on any Bulk, Shed, or Scall, or in any Place other than the Dwelling-house of the Person so selling, such Person should forfeit 10*l.* for every such Offence, and Judgment may be given by any one or more Justices of the Peace in the Place or Places where the Offence shall be committed, upon the Confession of the Offender, or upon the Oath of one or more creditable Witnesses, in a summary Way, within one Callendar Month after the Offence committed; one Half of the said Forfeiture must be paid to the Informer, the other to the Poor of the Parish where the Offence has been committed; and for want of sufficient Distress, or Refusal of Payment, the Offender must be sent to the House of Correction by the Justices for any Time not less than a Month, nor exceeding three Months.

THREE Years after, it being observed, that the constant and excessive Use of *Gin*, and other Spirituous Liquors, amongst People of inferior Rank, was not only destructive of their Healths, but unfitted them for useful Labour, debauched their Morals, and excited them to all kinds of Vices; to remedy which evils, it was ordained, That after the 29th of *September, 1736*, no Person by himself, or by any other Person employed by him, should sell or retail any Brandy, Rum, Arrack, Uisquebaugh, Geneva, Aqua Vitæ, or any other distill'd Spirituous Liquors, or Strong Waters, unmixed or mixed with themselves, or any other Ingredients, in any less Quantity than two Gallons*, without taking out a Licence, at least 10 Days before he offers to sell or retail the same, and paying down 50*l.* for the said Licence at the chief Office of Excise in *London*, if he intends to retail such Liquors within the Limits of the Penny-Post; but if he intends to retail without the Limits of the Penny-Post, then at the next Office of Excise to the Place where the Person taking out such Licence shall reside; and 50*l.* must be paid on renewing the Licence every Year, 10 Days at least before the Expiration of the old one; and any Person retailing as aforesaid without such Licence, and renewing the same every Year, shall forfeit 100*l.* for each Offence. AND a Duty of 20*s.* per Gallon, and so in Proportion for any greater or lesser Quantities, was laid upon all such Spirituous Liquors, by whatever Name or Names they are or may be called, which should be found in the Possession of any Retailer after the 29th of *September, 1736*, whether they were sold by themselves, or any other Person in trust for them, and this over and above all other Duties charged or chargeable upon the same†: and all the Laws in Force relating to the Excise upon Beer, Ale, and other Liquors are to be applied for recovering, levying, and mitigating these Duties upon Spirituous Liquors. AND after the 29th of *September, 1736*, every Person who shall retail any Spirituous Liquors, by whatever Name they were or may be called, in any less Quantity than two Gallons, must make an Entry at the next Excise Office of all the Warehouses or other Places used by him for the laying, keep-

* Altered by Page 303.
By Pages 302, 303, 304.

† See this 50*l.* for Licence, and 20*s.* per Gallon, altered

ing, or retailing any of the said Commodities, at least 10 Days before he retails the same; and also of all the Spirituous Liquors that are therein at the Time of making such Entry, or which at any Time after shall come into such Warehouses or other Places, upon Pain of forfeiting 20*l.* for every Warehouse, or other Place made use of without such Entry; and likewise 40*s.* for every Gallon of such Liquor which shall be concealed, and not entered, together with all the Liquors and Casks in which they are contained. AND for the more effectual securing these Duties, no Spirituous Liquors by whatever Name or Names they are or may be called, shall be brought into any Warehouse or other Place, after the said 29th Day of *September* 1736, without first giving Notice to the Excise Officer, and leaving with him an authentic Certificate which must express the Quantity and Quality thereof, the Name of the Seller, and at what Place the Duties were paid, or the said Liquors condemned, or of whose Stock the same was a Part of, on Pain of forfeiting 20*l.* together with the Liquors and the Casks in which they are contained. AND if any Retailer, after the said 29th Day of *September*, 1736, shall increase such Spirituous Liquors after an Account has been taken of them by the Officer, by the Addition of Water or any other Liquors, he shall forfeit 40*s.* for every Gallon of such Spirits and Water, or other Liquors mixed as aforesaid: which Liquors shall be seized by the Officers for his Majesty's Use. THE Officers for these Duties by Day, or by Night, (but if in the Night-time, in the Presence of a Constable;) and Oath being first made by such Officer, or other Person, before a Justice in or near such Place of his suspecting a Concealment of such Spirituous Liquors, may enter into any Warehouse, Storehouse, Shop, Cellar, Vault, Room, or other Place used by such Retailers, and gauge the Liquors there found; and if any such Retailer shall refuse or hinder the Officer in the Discharge of his Duty, he shall forfeit 50*l.* for every Offence. AND since it had been found, that many Persons who employ great Numbers of Journeymen, Workmen, Servants, Labourers, and other Artificers, have dealt in Spirituous Liquors, and retailed them at excessive Prices to those that work under them, it was ordained, That after the said 29th Day of *September*, 1736, no such Licences should be granted but to such Persons only who keep public Victualling-houses, Inns, Coffee-houses, Ale-houses, or Brandy-shops, and use no other Trade whatsoever; and if such Licences should be granted to any other Persons, they were declared void. AND if any Person shall pay any Part of their Journeymen, or other Persons working under them, their Wages in Spirituous Liquors, they shall be deemed Retailers of Spirituous Liquors, and shall forfeit 20*l.* over and above all other Penalties; and any Journeyman, or Person, may recover his whole Wages, notwithstanding such Agreement, or any such Liquors received in Part thereof. BUT Spirituous Liquors made use of by any Physicians, Apothecaries, Surgeons, or Chymists, for preparing or making up of Medicines for sick, lame, or distempered Persons only, are not liable to the said Duties*. AND every Person who shall hawk, sell, or expose to sale such Spirituous Liquors, by what Name or Names they were or may be called, in the Streets, Fields, Highways, or upon the Water, in any manner whatever, or in any other Place or Places but what are entered as aforesaid, shall forfeit 20*l.* for every Offence; and such Offenders may be convicted before any Justice of the Peace in whose Liberty such Offence shall be committed, either by the Confession of the Party, or by the Oath of one or more creditable Witnesses; and the Offender not paying the Penalty of 10*l.* immediately,

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upon Conviction, into the Hands of the Church Wardens and Overseers of the Poor of the Parish where such Offence shall be committed, he must be sent to the House of Correction * for two Months, or until he pays the same. AND the Money arising from the Conviction of any Person, (in case there be no Informer,) shall be wholly for the Use of the Poor of the Parish; but in case there shall be an Informer, one Half to go to him, the other to the Poor of the Parish wherein the Offence was committed. BUT no such Licence for retailing Spirituous Liquors can enable any Person to sell such Liquors by retail, unless he is first licensed by two Justices of the Peace of that Division in which he lives, and for which Justices Licence, *2s. 6d.* † shall be paid to their Clerk, *if he finds the Licence*, and no more. And if the Justice's Clerk, or the Clerk of the Peace, shall ask or receive any other Fee whatsoever, they shall forfeit *5l.* AND if any Person selling Provisions or other Things by retail, shall give away any Spirituous Liquors to Servants or Apprentices fetching Goods, Provisions, or other Things from their Shops or Houses, he shall be deemed a Retailer of Spirituous Liquors, and be liable to the Penalties and Forfeitures accordingly. AND for the preventing Persons selling Beer, Ale, Cyder, or any Spirituous Liquors, by Retail, without Licence, every Justice may summon any Excise Officer to give them an Account upon Oath, touching the Entry of any Spirituous Liquors, Beer, Ale, Cyder, or Perry made by Persons suspected to sell them without a Licence, and such Entry shall be deemed a selling of such Liquors to all Intents and Purposes, as if the same had been proved by the Oath of two Witnesses. AND those Persons, who had exercised the Art or Business of Distillation for seven Years, or who were Apprentices to the same on the 25th of *March, 1736*, may follow any Trade in any City, Town, or Place, notwithstanding any Law, Charter, Grant, or Custom to the contrary; tho', I think, the University of *Oxford* lately ejected a Distiller who opened a Tavern there. BUT *Aqua Vitæ* retailed and consumed in *Scotland*, and the Retailers thereof, are not obliged to take out such Licences as are before directed.

THE next Year, *viz. Anno 1737*, it was declared, That for the removing such Doubts as had arose, touching the recovering, levying, and mitigating the Penalties and Forfeitures imposed by a Law made for laying a Duty upon the Retailers of Spirituous Liquors, and for licensing the Retailers thereof, it was ordained, That all the Penalties and Forfeitures thereby imposed might be sued for, recovered, levied and mitigated, as any Penalty or Forfeiture may be sued for, recovered, levied or mitigated, as directed by a Law made the 12th *Car. II.* except where other Methods are there directed. AND whereas several Persons, who were desirous of putting the Laws in Execution, had not the Encouragement, which they justly deserved, where the Offenders were not able to pay the Penalty, but in lieu thereof were sent to the House of Correction, to remedy which, it was ordained, That after the 24th of *June 1737*, it should be lawful for the Commissioners of Excise to cause such Rewards to be paid to the Persons, who should appear to them to be entitled thereto, out of any Money they, or their Officer belonging to them, should have in their Hands, that had or should arise on Account of any Penalties or Forfeitures against the said Law. AND the Money so paid shall be allowed in their Accounts, as so much Money paid to his Majesty, and the Commissioners are to be discharged therefrom accordingly. AND each Offender, upon Conviction, and up-

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* See Page 300.

† See this enforced on Page 310.

on refusal to pay the said Penalty of 10*l.* shall be committed to the House of Correction; and before his or her Discharge therefrom, shall be stripped naked from the Middle upwards, and whipped until his or her Body be bloody*.

THE next Year *Anno* 1738, it being found that, notwithstanding the several Endeavours to restrain the pernicious Use of Spirituous Liquors, or Strong Waters, the drinking of them was still too common, especially among Persons of low Rank: And the Persons, who exposed them to sale, contrary to the Laws then in Force, were mostly Persons of little or no Substance: And it having been experienced, that, to prevent the Discovery of Offenders, and by that Means to evade the Penalty to which they were subject, many Persons clandestinely retailed the said Liquors without a Licence, or in some Place or Places not allowed of by Law, and the Persons selling the same were not seen, but were hid behind some Wainscot, Curtain, Partition, or were otherwise concealed; to remedy which for the future, it was ordained, That after the 24th of June 1738, if any less Quantity than two Gallons † of Spirituous Liquors, or Strong Waters, mixed or unmixed, should be sold, uttered, or delivered in any private or clandestine Manner, to any Person in any House, Out-house, Stable, Barn, or Shed, or in any other Place, Part of, or belonging to any House or Farm, the Occupier or Occupiers of such House, Farm, or Part of any House or Farm, or other Place, where such Spirituous Liquor shall be sold, being privy or consenting thereto, should be deemed the Retailer, or Retailers of such Spirituous Liquors, and should forfeit 100*l.* for every such Offence, to be recovered and applied as the Penalty for selling or retailing any Spirituous Liquors in a less Quantity than two Gallons, without taking out a Licence. THERE having been innumerable Instances of several lawless and disorderly Persons, who had assembled themselves to rescue Offenders, and to abuse those concerned in bringing them to Justice, and who had assaulted and almost murdered several Officers, and other Persons, who either had given, or were about to give Informations against such Offenders; to prevent such Practices for the future, it was ordained, That if any Persons, to the Number of Five or more, should, in a tumultuous and riotous Manner, assemble to rescue any such Offender, or to assault, beat, or wound any Person who had given, or should be about to give any Information or Evidence against, or had discovered or given Evidence against, or was about to discover, seize, or bring to Justice any Person offending against the Ordinance for the Year 1736, every Person or Persons so assembling, and their Aiders and Abettors, being lawfully convicted thereof, should be adjudged to be guilty of Felony, and should be transported for seven Years. AND it was further ordained, That if any Action should be brought by any Person, in any inferior Court, against any Justice or other Person employed in the Execution of this, or the Ordinances of the Year 1736, or 1737, the Defendant in such Action, upon making Affidavit, that he intends to insist in his Defence to such Action, to remove such Action or Suit into any of the Courts at *Westminster*, provided the Writ for removing it be delivered to the proper Officer of the said inferior Court before Issue joined in the said Action, such Defendant may plead the general Issue, &c. and shall recover treble Costs. IT having been experienced, that the summoning Offenders gives them an Opportunity to abscond from Justice, the Generality of them being Persons of little or no Substance, and seldom have any settled Habitation:

* See Page 299.

† See 302, 303.

it was therefore ordained, That for the future one or more Justices of the Peace, upon Information made before him upon Oath against any Person for hawking, selling, or exposing to sale any Spirituous Liquors, or Strong Waters contrary to Law, should issue his Warrant under his Hand and Seal, directed to any ministerial Officer of the Peace, for the bringing such Offender before some Justice for the County or Place where the Offence was committed, that the Offender may be dealt with according to Law. AND because a Constable or other Peace-Officer is not always at hand to apprehend the Offender, he often escapes unpunished; to prevent which for the future, it was ordained, That it should be lawful for any Person or Persons whatsoever, to seize and detain any Person or Persons who shall hawk, sell or expose to sale any Brandy, Spirituous Liquors, or Strong Waters about the Streets, Highways, or Fields, in any Wheel-barrow, or Basket, or upon the Water, in any Ship, Boat, or Vessel, or in any other Manner whatsoever, or that shall sell, or expose the same to sale on any Bulk or Stall, or in any Shed or Place prohibited by Law, for such reasonable Time as he may give Notice to the Constable, Headborough, Tything-man, Church-Wardens, or Overseers of the Poor, or some other Peace or Parish Officer or Officers, who are required to carry such Person before one Justice of the Peace, for the County or Place where such Offence was committed; and the Justice is required to proceed to the Examination of such Offender, in the same Manner as if he had been brought before him by a Constable, or any other Peace Officer; and if such Person shall be convicted of the Offence, he is liable to the same Penalties, and the same corporal Punishment as Offenders against the Ordinances of the Year 1736 and 1737. AND all such Forfeitures, which from Time to Time are paid to any Church-Wardens, or Overseers of the Poor, must be applied and accounted for by them in the same Manner as other Monies raised and received on the Poor's Rates. IT appearing that several Constables, and other Peace-Officers, having refused or neglected to be assisting in the Execution of the said Ordinances, although thereunto required; it was ordained, That if any Constable, or other Peace-Officer whatsoever, after the 24th of June, 1738, should refuse or neglect upon due Notice or Request, or upon their own View, to be aiding and assisting in the Execution of the Premises, or of the Ordinances, of the Years 1736 and 1737, or any or either of them; and being convicted thereof before any Justice of the Peace of the County or Place where such Offence shall be committed, upon the Oath of one or more credible Witnesses, shall forfeit 20*l*. for every such Offence, to be levied by Distress; one Half whereof shall go to the Poor of the Parish where such Offence shall be committed, and the other Half to the Informer who may sue for the same. AND no Distiller, or other Dealers in Spirituous Liquors or Strong Waters whatsoever, whilst he exercises such Business, may act as a Justice of the Peace in any Matter or Thing whatsoever relating to the Premises*, And all Penalties and Forfeitures then imposed, are to be sued for, levied, and mitigated, as in like Cases is directed by the Excise Laws, or by Action of Debt, Bill, Plaint, or Information, in any of the Courts of Record at *Westminster*, or the Exchequer Courts in *Scotland*; and such Forfeitures and Penalties not otherwise directed to be disposed of, are to be distributed one Half to the King, and the other Half to the Informer.

ABOUT *Five Years* after (the Endeavours of the Legislature to have restrained the excessive drinking of Spirituous Liquors having proved ineffectual) it was ordained, *That after the 25th of March 1743,* **1743.** the Duty of 20 s. a Gallon laid on all Spirituous Liquors in the Possession of any Retailer, and the 50 l. to be paid yearly for a Licence (as on *Page 297*) should cease; and that instead thereof, there should be paid by the Distillers or Makers thereof (over and above all Duties, Charges, and Impositions already set, rated, and imposed, the several Rates and Duties of Excise hereafter mentioned *) *Low Wines or Spirits of the first Extraction, made or drawn from any foreign or imported Materials, or any Mixture therewith, for every Gallon Six-Pence. Spirits made in Great-Britain, of any Kind of Wine or Cyder imported, for every Gallon, Six-Pence. Low Wines, or Spirits of the first Extraction, made or drawn only from any Sort of Drink or Wash, brewed or made from any Sort of Malt or Corn, other than and except Brewers Wash and Tilts, for every Gallon, one Penny. Low Wines or Spirits of the first Extraction, made or drawn from Brewers Wash or Tilts, or any Mixture therewith, for every Gallon, one Penny. Low Wines or Spirits of the first Extraction, made or drawn from any other Sort or Kind of English Materials, or any Mixture therewith, for every Gallon, three Half-Pence. Strong Waters, or Aqua Vitæ made for Sale of any other Materials, for every Gallon, Three Pence.* AND that no Person should presume to retail any Arrack, Rum, Brandy, Geneva, Aqua Vitæ, Usquebaugh, or any other distill'd Spirituous Liquors or Strong Waters, unmixed or mixed with themselves, or any other Ingredients, (by whatsoever Name or Names they are, or may be publickly or privately called) without taking out a Licence Ten Days before they presume to retail any of the said Liquors, and for which Licence 20 s. is to be paid to the Commissioners, or those they shall appoint to receive it.

Licences, within the Bills of Mortality, to be granted under the Hands and Seals of *two or more* of the Commissioners of Excise; but in any other Place, under the Hands and Seals of the several Collectors and Supervisors, in their several Districts. And every Person that has taken out such Licence, is to renew his Licence, and pay 20 s. yearly; and this must be done at least Ten Days before the Expiration of the former Licence. And any Person presuming to sell any of the aforesaid Liquors, without taking out and renewing such Licence, forfeits 10 l. for every Offence, one Half to the King, and one Half to the Informer: [To be sued for, levied, recovered, or mitigated, by such Ways, Means, and Methods, as any Fine, Penalty, or Forfeiture is or may be recovered or mitigated by any of the Excise-Laws, or by Action of Debt, Bill, Plaint, or Information in any of the Courts of Westminster, and the Defendant to have Treble Costs,] which if they refuse or neglect to pay, when demanded, they are to be sent to the House of Correction, and kept to hard Labour for two Months †. B. U. T. if such Licence for selling any Spirituous Liquors or Strong Waters by Retail is granted to any who do not keep an Inn, Ale-house, Victualling-house, Coffee-house, or Tavern, it is void. And when it is granted to those Traders, it cannot protect them in the Retailing Spirituous Liquors or Strong Waters, unless they are first licenced by *two or more* Justices of the Peace to sell Ale or Spirituous Liquors, AND no Person is to be deemed to be a Retailer of Spirituous Liquors, unless he register to retail a house or shop, with vituallings at least to some tails

See Page 304. † See Page 304. ‡ See this explained on Page 303. || See this explained on Pages 303 & 304.

tails the same to be drank or consumed in his Warehouse, Store-house, Shop, Cellar, or other Place; or unless he sends the same abroad out of such Places, in less Quantities than a PINT*. BUT the using of Spirituous Liquors in preparing or making up Medicines † for such as are sick, lame or distempered, is not to be deemed *retailing*; nor in Scotland are the Makers or Retailers of Spirits distilled from *malted Corn*, (commonly called *Aqua Vitæ*) either obliged to take out these Licences, or to pay any farther Duties.

THE next Year (viz. 1744) the Legislature found it necessary to explain the Power given to Justices by the Ordinance of 1743 concerning the Penalties and Imprisonments for retailing Spirituous Liquors without a Licence, and accordingly did then ordain, that 1744. all the said Penalties and Forfeitures, as well as all the Penalties by this present Ordinance imposed, might be lawfully sued for, recovered, levied, and mitigated by such Ways, Means and Methods, as any Penalty or Forfeiture is, or might be sued for, recovered, levied, or mitigated by any Law, or Laws of Excise. AND, that it should, and might be lawful for any such Justices of the Peace, before whom such Offender should be convicted, if they shall judge it most proper, instead of levying the Penalty, to commit such Offender to the House of Correction, to be kept to hard Labour for two Months; and that before his or her Discharge therefrom, such Offender be stripped naked from the Middle upwards, and be whipped 'till his or her Body be bloody. At the same Time it was likewise found necessary to make this Explanation of the Ordinance of 1743, concerning the granting of Licences, viz. That in any Case where a Licence should have been granted for retailing Spirituous Liquors, to any Person, who should at the Time of granting such Licence, keep a Tavern, Victualling-house, Inn, Coffee-house, or Ale-house, if such Person so licensed should afterward, during the Time of continuing such Licence, exercise the Trade of a Distiller, Grocer, or Chandler, or keep a Brandy-Shop, or Shops, for Sale of any Spirituous Liquors, the Licence granted in every such Case should be void; and that such Persons retailing such Spirituous Liquors afterwards, should forfeit Ten Pounds for every such Offence, notwithstanding such Licence so obtained, as aforesaid. IT was also ordained, that no Licence for retailing Spirituous Liquors should authorise and empower any Person to whom the same might be granted, to sell such Spirituous Liquors in any other Place, except in such Houses or Places thereunto belonging, wherein he, she, or they should inhabit and dwell, at the Time of such Licence being granted them; and mentioned in it. AND it was also ordained, that from and after the Twenty-fourth Day of June, 1744, every Person or Persons, who should by him, or herself, or themselves, or by his, her or their Servant, or other Person, employed by him, her or them, or for his, her or their Benefit, retail any Spirituous Liquors, mixed or unmixed with any Ingredients, to be drank or consumed in any Quantity whatsoever, in his, her or their Houses, Warehouses, Shops, Cellars, Vaults, Sheds or other Places, to him, her, or them belonging, or that should retail or send the same abroad out of their said Houses, Warehouses, Store-houses, Shops, Cellars, Vaults, Rooms, Sheds, or other Places, in less Quantity than two Gallons, without first taking out a Licence for that Purpose, and renewing the same as directed by the Ordinance of 1743, is particularly directed, shall be deemed a Retailer of Spirituous

* See Pages 300, 303.

† See Pages 298, 308.

rituous Liquors, within the Meaning of the said Ordinance; and as such should forfeit and lose the Sum of 10*l*. for every such Offence: AND it was further ordained, that from and after the 24th of June 1744, in all Cases where the Persons incurring the pecuniary Penalties inflicted by this present Ordinance, or by the Ordinance of 1743, are not able to pay the same, but shall be sent to the House of Correction, it shall be lawful for the Commissioners of Excise, to cause such Rewards, not exceeding Five Pounds, to be paid to the several and respective Persons, who shall appear to them to be entitled thereto, as Informers, out of any Money that shall be in their Hands, or of any Officer belonging to them, that hath arisen, or shall arise by Virtue of any Penalties and Forfeitures, incurred by this Ordinance, or the Ordinance of 1743, and the Money so paid, shall be allowed in their Account, as so much Money paid to his Majesty.

ABOUT two Years after it was ordained, That from and after the 24th of March 1746, there should be paid to his Majesty, his Heirs and Successors, by the Distillers or Makers thereof, for the several Spirituous Liquors, made, extracted, and manufactured in Great-Britain, hereafter mentioned, (over and above all Duties, Charges, and Impositions, formerly set, rated, and imposed) these several Rates and Duties of Excise, viz. FOR all Low Wines, or Spirits of the first Extraction, made or drawn from any foreign or imported Materials, or any Mixture therewith, three Pence per Gallon. FOR all Spirits made in Great-Britain, of any Kind of Wine or Cyder imported, three Pence per Gallon; FOR every Gallon of Low Wines, or Spirits of the first Extraction, made or drawn only from any Sort of Drink or Wash, brewed or made from any Sort of Malt or Corn, other than except Brewers Wash or Tilts, to be paid by the Distillers or Makers thereof, one Half-penny. FOR every Gallon of Low Wines, or Spirits of the first Extraction, made or drawn from Brewers Wash or Tilts, or Mixture therewith, to be paid by the Distillers or Makers thereof, one Half-penny. FOR every Gallon of Low Wines, or Spirits of the first Extraction, made or drawn from any other Sort or Kind of English Materials, or any Mixture therewith, to be paid by the Distillers or Makers thereof, three Farthings. FOR every Gallon of Strong Waters, or Aqua Vitæ, made for Sale of any other Materials, to be paid by the Distillers or Makers thereof, three Half-pence. AND that upon Exportation, there should be a Drawback of the said Duties. AND it was then declared, that it was not the Intention of this Ordinance, that Low Wines or Spirits of the first Extraction from *Melasses* only, should be chargeable with more Duty than 1*s.* per Gallon; or that Spirits from such Low Wines or Spirits of the first Extraction, made or drawn from *Melasses* only, should be chargeable with more than 6*d.* per Gallon. AND it was further ordained, That all the Powers, Authorities, &c. granted by any of the Laws now in Force relating to the Excise, should be exercised, practised, applied, used, and put in Execution, in and for the managing, raising, levying, and mitigating these Duties; and that all Fines, Penalties, and Forfeitures, hereby imposed, should be sued for, levied, or mitigated by any of the Excise Laws, or by this Ordinance, or by Action of Debt, Bill, Plaint, or Information, in any of his Majesty's Courts of Record at *Westminster*, or in the Court of Exchequer in *Scotland*; and that one Moiety of every such Fine, Penalty, or Forfeiture, should be to the King, and the other Moiety, to him or them, that should discover, inform, or sue for the same.

THE Legislature having found that the Ordinances of the Year 1743, and of the Year 1744, had been found to be inconvenient, so far as relates to honest reputable Distillers, and that the Alteration thereof in that particular would also tend to the Benefit of his Majesty's Revenue. IT was ordained, that from and after the 24th of June 1747, it should and might be lawful for the Distillers within the Cities of *London* and *Westminster*, Borough of *Southwark*, or Weekly Bills of Mortality, to take out Licences for retailing Brandy, Rum, Arrack, Uisquebaugh, Geneva, Aqua Vitæ, or any other Spirituous Liquors or Strong Waters, upon Payment of Five Pounds *†* for every such

Licence,

* See Pages 302 and 306,

† See Pages 297, 302, and 303.

Licence, which is to be renewed Yearly, upon the Payment of the like Sum of Five Pounds. And these Licences are to be taken out in the same Manner, and subject to the like Penalties for retailing without Licence, as are directed and appointed by the Ordinance of 1743. But it is to be observed, that Distillers in Partnership are to have but one Licence: And that no such Distiller or Distillers, should be allowed to take out a Licence, unless he, she, or they, inhabiting within the City of London, are respectively rated, and do pay Church and Poor's Rates, for the Value of 20*l. per Annum*, and inhabiting in any other Parts within the Weekly Bills of Mortality, for the Value of 10*l. per Annum*, in the Parish, or Place, where he, she, or they shall exercise the Trade of Distilling; and if any Licences shall be granted otherwise, or to any other Persons than as here directed, the same are declared to be void to all Intents and Purposes. AND that no Distiller should retail any Spirituous Liquors or Strong Waters in any other Place, than in his publick Shop only, and in no more than one Shop, by virtue of any one Licence, under Pain of forfeiting, for every such Offence, the Sum of Ten Pounds. THAT if any Distiller, or Distillers, licensed and authorized as above, should at any Time after the Twenty-fourth Day of June, 1747, by himself, or by any other Person employed by him, wilfully suffer or permit any Person or Persons to drink or tipple any such Liquors, every Distiller or Distillers so offending, shall, for every such Offence, forfeit, and pay the Sum of Ten Pounds; which shall be sued for, levied, recovered, and mitigated by such Ways, Means, and Methods, as any Fine, Penalty, or Forfeiture, is, or may be recovered or mitigated by any Law or Laws of Exciise; the one Moiety to the King, and the other to him, or them, who shall discover, inform, and prosecute for the same. AND that every Person who should be found drinking or tipping in the House, Shop, or other Place belonging to any Distiller, after the Twenty-fourth of June, 1747, should, for every such Offence, forfeit and pay the Sum of 20*l.* to be recovered and levied by Way of Complaint, to be made within three Weeks after such Offence shall be committed, before one or more of his Majesty's Justices of the Peace, for and near the Place where the same shall happen, who is and are hereby required to summons before him, or them, the Party so offending; and in Default of Appearance, to issue a Warrant for apprehending such Offender, and then proceed to examine such Complaint upon Oath, and upon due Proof of such Offences, by the Oath or Oaths of one or more credible Witness or Witnesses, to convict the Offender accordingly; and in Case such Forfeiture shall not be paid forthwith, that then the same shall be levied by Distress and Sale of such Offender's Goods and Chattels, by Warrant or Warrants under the Hand and Seal of such Justice or Justices, rendering the Overplus, if any, to such Offender; and such Forfeiture when levied, shall be applied to and for the Use of the Poor of the Parish, where such Offence or Offences shall be committed; and that for want of sufficient Distress, such Offender should be committed to the House of Correction, for any Time not exceeding two Months; and not less than fourteen Days, there to be kept to hard Labour; and that no Person so to be convicted, should be capable of receiving any Part of the Penalties or Forfeitures incurred by the Distiller or Distillers, who should sell or vend any such Liquors so to be drank or tippled; any Thing herein contained to the contrary thereof in any wise notwithstanding.

ABOUT six Years after, by an Ordinance for granting an additional Duty on Spirituous Liquors, and upon Licences for retailing them; and for repealing the Ordinance of 1747, and for restraining the retailing of such Liquors; and for allowing a Draw back upon their Exportation; and for subjecting the Parish of *St. Mary le Bon* to the Inspection of the Chief Office of Excise. It was declared, that drinking of Spirituous Liquors having of late Years increased, to the great Detriment of the common People, and this chiefly owing to the Number of those who have obtained Licences under Pretence of being Distillers, and of those who have presumed to retail those Liquors without Licence, contrary to Law; NOW for restraining such Abuses, and, that the Revenue may not be prejudiced; It was ordained, that after the First Day of *July*, 1751, there should be paid by the Distillers or Makers, (over and above all Duties, Charges, and Impositions already imposed) as follows: Low Wines, or Spirits of the first Extraction, from any Sort or Drink, or Wash, made for Sale from any Sort of Malt or Corn, or from Brewer's Wash, or Tilts, or any Mixture therewith, for every Gallon *Three Half-pence*. Strong Waters, or Aqua Vitæ, made for Sale of the Materials aforesaid, or any of them, for every Gallon *Four Pence Half-penny*. Low Wines, or Spirits of the first Extraction, from Cyder, or any Sort or Kind of *British* Materials, made for Sale, except those beforementioned, or any Mixture therewith, for every Gallon *One Penny Three Farthings*. Spirits made for Sale from Cyder, or any Sort or Kind of *British* Materials, except those beforementioned, for every Gallon *Three Pence Half-penny*. AND it was also ordained, that the Duty of 5*l.* payable for a Licence, by Virtue of the Ordinance of 1747, should cease and determine; and, in Lieu and Stead of the Duty of 5*l.* there should, after the Twenty-fifth of *March*, 1752, be laid an additional Duty of 20*s.* per Annum for every Licence, which 20*s.* is to be paid as directed by the Ordinance of 1747, and that the Penalties and Forfeitures imposed by the said Ordinance are to be still in Force; and also the Powers of any other Ordinance, with Regard to the Duties, &c. now granted and imposed. And, whereas it may be doubted whether the Penalty of 10*l.* † imposed by the Ordinance of 1743, could be recovered within the Limits of the Chief Office of Excise in *London*, before a Justice, it was declared, that any Person retailing without a Licence, within the Limits of the said Chief Office, may be convicted before any Justice of the Peace for the City, County, or Liberty where the Offence should be committed, as well as before the Commissioners of Excise; but neither the Justices or Commissioners should in any Case mitigate the Penalty to less than 5*l.* NO Person to be licenced, in the Limits of the Chief Office, but such as are rated to the Parish Rates for 10*l.* a Year; nor in any other Part of the Kingdom (where there are Rates to Church and Poor) but to such as are assessed and pay to Church and Poor, and for no longer a Time than the Person so licenced should be qualified as aforesaid. AND any Person not authorized by Law retailing Spirituous Liquors, for the first Offence to be subject not only to the Penalties now in being, but all such Liquors that shall be then, or at any Time or Times within six Calendar Months after Conviction, be found in the Custody of such Offender, or in the House, Lodgings, Shop, or Warehouse where such Offence should be committed, or any Court, Yard, Ground, or Place occupied therewith, whether then in the Occupation of such Offender, or not, or in the Occupation of any other Person whom

whomsoever, should and might be seized, by Warrant of the said Commissioners, or of any Justice within their respective Jurisdictions; and on finding the same it should be staved, or otherwise destroyed; for which Purpose, any Peace or Parish Officer, authorised by such Warrant aforesaid, should have Power, at any Time within the Space of *six Months* after Conviction, to enter such Places, and break open Doors, if not opened, on Demand; and if any Person should, after such Conviction, offend a *second Time*, it should be lawful for the Commissioners, or Justices respectively, before whom such Offender should be convicted, as well to inflict the Penalties by any former Law, as also to commit such Offender to the House of Correction, to be kept to hard Labour, for any Time not exceeding *three Months*, and also (if they should think fit) to order such Offender to be whipt; and in Case any Person who shall have been convicted of such subsequent Offence as aforesaid, should offend a *third Time*, it should be deemed *Felony*; and the Offender being indicted and convicted thereof, should suffer as in Cases of Felony, and may, by the Justices at their General or Quarter-Sessions (who are impowered to hear and determine such Felony) be ordered to be transported for any Time not exceeding *seven Years*. AND for the Discovery and Punishment of Offenders, it was ordained, that the Commissioners of Excise, and Justices of the Peace, in their respective Jurisdictions, or any one or more Justices, upon Oath made of any Offence committed against this, or any other Ordinance in Force, for regulating the retailing Spirituous Liquors, to grant their Warrant to any of the Peace-Officers, or other Parish-Officers of the Parish or Place, to enter, and search the House, Lodgings, Shop, Warehouses, Cellars, and other Places, where such Offences shall have been sworn to have been committed, or in the Occupation of the Person sworn against, and the Persons authorised by such Warrant, may enter such Houses, Lodgings, Shops, Warehouses, and other Places, and break open the Doors, in case they are not forthwith opened on Demand, and search for, and seize, all such Spirituous Liquors as they should there find, and detain the same till the Matter of the Offence should be heard and determined; and if the Offender is convicted, the Liquors shall be forthwith staved and destroyed, but if such Person be not convicted, then the Liquors shall be restored. AND if any Distiller, or other Person, should knowingly sell or deliver, or cause to be sold or delivered, by his Servants or others, directly or indirectly, any Quantity of distilled Spirituous Liquors to be unlawfully retailed, or to any unlicensed Retailer; such Distiller, or other Person, shall forfeit *10 l.* and treble the Value of all such Liquor so sold or delivered, one Half to the King, and one Half to such Person as will sue for the same; and if any Person guilty of retailing such Liquor, should discover the Distiller or other Person, who knowingly supplied him with such Liquors, and should prosecute the Distiller, or other Person for the same, without Fraud or wilful Delay, till he be convicted thereof, he should not only be entitled to his said Share of the Penalty, but shall be indemnified against all Penalties and Forfeitures incurred by him, before the Commencement of such his Prosecution for selling Spirituous Liquors without a Licence. AND no Person shall be entitled to maintain any Cause, Action, or Suit, to recover any Debt or Demand, on Account of such Liquors, unless such Debt shall have really, and *bona fide*, been contracted at one Time, to the Amount of *20 s.* or upwards; nor shall any Item, in any Account or Demand, for such Liquors be allowed, where the Liquors delivered at one Time, should not amount to *20 s.* at the least, without

without Fraud or Covinly and where no Part of the Liquor so sold, shall have been returned or agreed to be returned directly or indirectly. AND in case any Retailer, with or without a Licence, should take any Pledge by Way of Security, for the Payment for such Liquors, he should forfeit 40s. for every Offence, to be levied by Warrant of one Justice, where the Offence was committed, one Half to the King, and the other Half to the Informer; and the Person to whom such Pledge shall belong, should have the same Remedy, for the Recovery of it, or the Value thereof, as if it had never been pledged. AND it was also ordained, That no Licence should be granted for retailing Spirituous Liquors within Goals, Houses of Correction, Work-houses, or Houses for the Entertainment of Parish-Poor; and if any Goaler, Keeper, Master, or any Officer, sell, use, lend, or give away, or knowingly suffer any such Liquors to be sold, used, lent, or given away, or brought into any such Places (except such as shall be medicinally * prescribed) he shall forfeit 100 l. Half to the King, and Half to the Informer; and being a second Time convicted of the like Offence, it should be deemed a Forfeiture of his Office. AND Justices upon Information, that such Liquors are kept and disposed of in such Place, may enter and search, or empower a Constable so to do, and seize and save the same. AND Persons carrying or attempting, or endeavouring to carry or bring such Liquors into such Houses, may be taken before a Justice, and, on Conviction, be committed for three Months, or pay a Sum not exceeding 20 l. nor less than 10 l. Half to the Poor, and Half to the Informer. AND every Goaler, Keeper, &c. is always to keep hung up a fair Copy of the three Clauses of the Act of Parliament, in the most public Place of such Goal, Prison, &c. AND Justices may enter and demand a Sight thereof, and if the same is not fair and legible, he may convict the Goaler, Keeper, &c. in the Penalty of 40 s. Half to the Informer, and Half to the Poor of such Goal, Prison, &c. AND Justices are monthly to transmit to the Clerk of the Peace a Certificate of the Persons convicted for Offences against this, or any other Ordinance relating to Spirituous Liquors, or licensing the Retailers thereof; who is required to keep and enter the Certificate amongst the public Records, and such Certificates are to be Evidence upon any Information relating to Spirituous Liquors.

To supply certain Defects in the Laws then in being, and also to prevent certain Frauds for the future, it was ordained, That after the first Day of July 1751, every Distiller or Maker of Low Wines, or Spirits, for Sale or Exportation, should within ten Days after the said first Day of July 1751, and all Persons, who should after the said first Day of July 1751, become Distillers, or Makers of Low Wines, or Spirits, for Sale, or Exportation, should ten Days before they distil, or make any Spirituous Liquors, make a true and particular Entry in Writing, of all and every Still, Copper, Tun, Washback, Cask, or other Vessel, which he should make use of for the brewing, distilling, working, making, laying, or keeping any Worts, Wash, Low Wines, Spirits, or Strong Waters; and also of the Casks or Vessels such Distiller should make use of, for brewing, holding, or keeping of the *After-runnings* or *Feints*, from the second Extraction, which should from Time to Time be drawn from every such Still, (which said last mentioned Casks or Vessels are not at any one Time to exceed two in Number) and also of all such new Vessels, as such Distillers should make use of, for the Purposes aforesaid, on Pain of forfeiting for every such Still, Copper, Tun, Washback,

Cask,

* See Pages 298, 303.

Cask, or other Vessel before-mentioned, which should be made use of, and not entered, the Sum of 50*l*. AND every such Distiller is required to shew the Gauger who surveys him every such Still, Copper, or Vessel, so entered; and the Officer is required to mark them with a particular distinct and durable mark; and every Still, Copper, Tun, or Vessel, which shall be used by any Distiller for any of the Purposes aforesaid, without being so shewn, or marked, shall be deemed a Vessel, or Utensil, of which no Entry has been made. AND if any Person after such Utensil has been marked by such Officer, should rub out, or deface any such Mark, so fixed upon such Still, Copper, Tun, or Vessel, he should forfeit 20*l*. for every Offence. AND in order to prevent Frauds, by having proper Proofs to lay before the Courts, where Offences against the Laws relating to these Duties, shall be heard and determined, it was ordained, That after the First Day of July 1751, it should be lawful for any Gauger, or Officer, at any Time, to take a Sample of such Low Wines, or Spirits, and of Feints and Spent-Wash, paying for such Spirits, or Low Wines, after the Rate of 10*s*. a Gallon; and for the Feints and Spent-Wash, after the Rate of 1*s*. per Gallon; and, in Case any such Distiller, or any of his Workmen, or Servants, should refuse to permit the Gauger, or Officer, to take such Samples, or should any Ways hinder or obstruct him in taking such Samples, he shall forfeit 50*l*. for every such Offence. AND it was also further ordained, that, after the first Day of July 1751, every Distiller within the Bills of Mortality, should, twenty-four Hours at least, and in other Parts of Great-Britain, forty-eight Hours at least, before he receives any Quantity of Wine, Cyder, Sugar-Water, or any Kind of fermented Wash whatsoever into his Custody, give Notice to the Gauger, or Officer, who surveys his Work-house of the Quantity and Species thereof, and the Time when he intends to receive the same into his Custody, on Forfeiture of 50*l*. for every Offence in not giving such Notice as aforesaid. AND it was at the same Time ordained, that there should be a Draw-back of the Duties upon Exportation. AND that *Aqua Vitæ* made in Scotland, should be exempted from these new Duties, and the Retailers thereof from taking out Licences. AND that, after the first Day of July 1751, no Person whatsoever, being a common Brewer of Ale or Beer, or Inn-keeper, Distiller, or other Seller or Dealer in any Kind of Spirituous Liquors; or who is interested in any of the said Trades or Businesses, should, during such Time, be capable, or have any Power to act, or be directly or indirectly concerned in acting as a Justice of the Peace*, in any Matter or Thing in any wise relating to Distillers, or to the Duties imposed upon Low Wines, Spirits, or Strong Waters, or to the granting Licences to the Retailers thereof. AND in order to put an End to some Doubts concerning the Ordinances of the Years 1743 and 1744 (relating to the selling in less Quantities than two Gallons) it was ordained, that all and every the Powers, Penalties, Punishments, Forfeitures, &c. made since the Year 1743, relating to the selling of Spirituous Liquors without Licence, (except the Penalty of 100*l*. imposed by the Ordinance of 1736) may for the future, and from the Commencement of the Ordinance of 1744, might have been lawfully exercised, insisted, levied, and recovered, in Regard to every Person that had, or should offend against the Ordinances of 1743 and 1744, or this present Ordinance, or any of them, in like Manner as they might have been in relation to Persons offending against the said se-

* See Page 301.

veral and respective Ordinances, or any of them, made since the Year 1733. And, whereas it was ordained in the Year 1736, that *two Shillings and Six-pence, and no more**, should be paid to the Justice's Clerk for a Licence, and no Fee, or other Reward, to the Clerk of the Peace, for entering the same, on Forfeiture of 5*l*. AND, whereas the Ordinance of 1736, being in Part repealed, it has been doubted, if what related to the Fee to be taken for Licences, was not repealed also. And, whereas no particular Method is prescribed in the Ordinance of 1736, for the Recovery of the Penalty of 5*l*. NOW to put an End to all Doubts, it was ordained, that the Clause for restraining Justices Clerks for asking, or receiving more than 2*s*. 6*d*. for each Licence, is now, and should be, and remain in full Force; and that the Penalties and Forfeitures may be sued for, levied, and recovered, by Action of Debt, Bill, Plaint, or Information, in any Court of Record at *Westminster*, or by Indictment at the Assizes, or at the General or Quarter Sessions of the Peace, for the Use of the Person, who should sue for the same. And that no Essoign, Wager of Law, or more than one Imparlance, should be allowed. AND it was ordained, that after the first Day of *July*, 1751, the Parish of *St. Mary le Bon*, in the County of *Middlesex*, should be deemed and taken to be under the immediate Care, Inspection, and Management of the Chief Office of Excise in *London*, any Law, Custom, or Usage to the contrary notwithstanding. AND it was also ordained, that if any Persons, to the Number of *five or more*, should after the first Day of *July* 1751, assemble themselves to rescue any Offenders, against any of the Laws relating to Spirituous Liquors, or for licensing the Retailers thereof, or to assault, beat, or wound any Person, who has given, or shall be about to give any Information, or shall have discovered, or given Evidence, or should seize, and bring to Justice, any Person offending against any of those Laws, or forceably to oppose the Execution of this Ordinance, all such Persons, and their Aiders and Abettors, being thereof convicted, they should be adjudged guilty of *Felony*, and be transported for *seven* Years. And that all the Fines, Penalties, and Forfeitures imposed by this long Ordinance of 1751, should be sued for, levied, recovered, or mitigated by such Ways and Methods, as any Fine or Forfeiture was, or might be recovered or mitigated by any of the *Excise* Laws (not otherwise directed by this Ordinance) or by Action of Debt, Bill, Plaint, or Information, in any of the Courts of Record, at *Westminster*, or in the *Exchequer-Court* in *Scotland*; and that one Half of every such Fine, Penalty, or Forfeiture, should be to the King, and the other Half to him, or them, who should discover, inform, or sue for the same. AND if any Person should be sued, for any Thing done in Pursuance of this Ordinance, it must be in *three Months*, next after the Offence is committed; and such Person may plead the general Issue, and is to have treble Costs. And that all Persons so sued, or prosecuted, should be intitled to all the Privileges and Benefits for their legal Defence, as are provided by the Ordinance of 1736. AND, after the First of *July* 1751, where any Person should be convicted of any Offence in retailing Spirituous Liquors, and the pecuniary Penalty inflicted for such Offence, should not be paid, and cannot be levied in *one Month*, from the Time of Conviction, the Commissioners of the Excise are to cause such a Reward as they think fit, not exceeding 5*l*. each, to be paid to the several and respective Persons, who shall appear to them, to be entitled thereto as Informers, out of Monies in their Hands, arising by Forfeitures, and Penalties for the like Offences.

The

The Use and Intention of the following TABLES.

The Table at	s. d.	1	is for Candles, and Hops.
	0	1	— Sheep and Lambskins <i>tawed</i> .
	0	1	— Soap, Sheep and Lamb, &c. <i>tanned</i> ; Calf and Kid, <i>tawed</i> ; Paper-Hangings.
	0	2	— Starch, Roans <i>tanned</i> ; Skins and Pieces in Oil.
	0	3	— Sheep, and Lamb in Oil; printed Linen and Stuffs.
	0	4	— Silk Handkerchiefs; Goats <i>tanned</i> with <i>Shumack</i> .
	0	6	— Callicoes, Silver Wire, Buck and Doe, <i>tawed</i> ; Hides, Deer, Goat, and Beaver in Oil; brown Paper Ordinary.
	0	8	— Wax-Candles, Gilt Wire, Calf-skins in Oil.
	0	9	— Papers: Pot <i>second</i> , Brown Cap, <i>whited</i> Brown.
	0	10	— Low Wines from malted Corn.
	0	11	— Mead or Metheglin.
	1	0	— Printed Silks, Demy Paper <i>second</i> ; Slinks no Hair; Dog and Kid <i>tawed</i> .
	1	1	— Crown Paper <i>second</i> , Fools Cap <i>second</i> ; this <i>doubled</i> serves for <i>fine</i> Demy.
	1	2	— Low Wines from Cyder.
	1	6	— Crown Paper <i>fine</i> , Fools Cap <i>fine</i> ; Horse Hides <i>tawed</i> ; Parchment.
	2	0	— Beaver and Goat <i>tawed</i> .
	2	9	— Low Wines from Foreign Wine or Cyder.
	3	0	— Hides, Slinks in Hair <i>tawed</i> ; Vellum.
	4	8	— Single Brandy, &c. from <i>British Plantations</i> .
	6	2	— Single Brandy <i>foreign</i> , or from <i>Guernsey, Jersey, &c.</i>
	8	8	— Double Brandy, &c. from <i>British Plantations</i> .
	1	8	— Double Brandy <i>foreign</i> .

Example. What does the Duty of 531 Ounces of Silver Wire amount to at 6 d. per Ounce.

oz.	l.	s.	d.
500 is	12	10	0
30	0	15	0
1	0	0	6

Answer, 531 at 6d. comes to 13 5 6

If the Officer has Occasion for a larger Number than 1000, he may take it out at several Times, as in the above Example.

312 Cash-Tables for Distillers, Tanners, Tanners, &c.

Pds, or Yds, or Gall. &c.	At 1 d.			At 1 d. $\frac{1}{4}$			At 1 d. $\frac{1}{2}$			At 2 d.			At 3 d.			At 4 d.			At 6 d.			
	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	
10	0	0	10	0	0	1	0	0	1	0	0	2	0	0	3	0	0	4	0	0	6	
20	0	0	20	0	0	2	0	0	2	0	0	4	0	0	6	0	0	8	0	0	12	
30	0	0	30	0	0	3	0	0	3	0	0	6	0	0	9	0	0	11	0	0	16	
40	0	0	40	0	0	4	0	0	4	0	0	8	0	0	12	0	0	14	0	0	20	
50	0	0	50	0	0	5	0	0	5	0	0	10	0	0	15	0	0	18	0	0	26	
60	0	0	60	0	0	6	0	0	6	0	0	12	0	0	18	0	0	22	0	0	32	
70	0	0	70	0	0	7	0	0	7	0	0	14	0	0	21	0	0	28	0	0	40	
80	0	0	80	0	0	8	0	0	8	0	0	16	0	0	24	0	0	32	0	0	48	
90	0	0	90	0	0	9	0	0	9	0	0	18	0	0	27	0	0	36	0	0	56	
100	0	0	100	0	0	10	0	0	10	0	0	20	0	0	30	0	0	40	0	0	60	
110	0	1	10	0	1	1	0	1	1	0	1	10	0	1	2	0	1	3	0	1	6	
120	0	1	20	0	1	3	0	1	3	0	2	0	0	3	3	0	4	4	0	6	6	
130	0	1	30	0	1	4	1	1	4	1	2	2	0	4	6	0	4	8	0	7	0	
140	0	1	40	0	1	5	2	1	5	2	2	4	0	5	9	0	5	0	0	7	6	
150	0	1	50	0	1	6	3	1	6	3	2	6	0	6	0	5	4	0	0	8	0	
160	0	1	60	0	1	8	0	2	8	0	2	8	0	6	4	6	5	8	0	8	6	
170	0	1	70	0	1	9	1	2	9	1	2	10	0	6	4	6	6	0	0	9	0	
180	0	1	80	0	1	10	2	2	10	2	3	0	3	0	4	9	6	4	0	9	6	
190	0	1	90	0	1	11	3	2	11	3	4	2	3	2	0	5	6	8	0	10	6	
200	0	1	100	0	2	1	0	2	1	0	2	6	0	3	4	0	7	0	0	10	6	
210	0	1	10	0	2	2	1	2	2	1	3	6	0	5	3	0	7	4	0	11	0	
220	0	1	20	0	2	3	2	2	3	2	3	8	0	5	6	0	7	8	0	11	6	
230	0	1	30	0	2	4	3	2	4	3	4	10	0	5	9	0	8	0	0	12	0	
240	0	2	0	0	2	6	0	3	6	0	4	0	0	6	2	0	8	4	0	12	6	
250	0	2	10	0	2	7	1	3	7	1	4	2	0	6	6	0	8	8	0	13	0	
260	0	2	20	0	2	8	2	3	8	2	4	4	0	6	9	0	9	0	0	13	6	
270	0	2	30	0	2	9	3	3	9	3	4	6	0	7	0	0	9	4	0	14	0	
280	0	2	40	0	2	11	0	3	11	0	4	8	0	7	3	0	9	8	0	14	6	
290	0	2	50	0	3	0	1	3	0	1	5	0	0	7	6	0	10	0	0	15	0	
300	0	2	60	0	3	1	2	3	1	2	6	0	0	7	6	0	10	0	0	15	0	
400	3	4	0	4	2	0	0	5	0	0	6	8	0	10	0	0	13	4	1	0	0	
500	4	2	0	5	2	0	0	6	3	0	8	4	0	12	0	0	16	8	1	5	0	
600	5	0	0	6	3	0	0	7	6	0	10	0	0	15	0	1	0	0	1	10	0	
700	5	10	0	7	3	0	0	8	9	0	11	8	0	17	6	1	3	4	1	15	0	
800	6	8	0	8	4	0	0	10	0	0	13	4	1	0	0	1	6	8	2	0	0	
900	7	6	0	9	4	0	0	11	3	0	15	0	1	2	6	1	10	0	2	5	0	
1000	8	4	0	10	5	0	0	12	6	0	16	8	1	5	0	1	13	4	2	10	0	
2000	16	8	1	0	10	0	1	5	0	0	13	4	2	10	0	3	15	0	7	10	0	
3000	1	5	0	1	11	3	0	1	17	6	0	2	10	0	3	15	0	6	13	4	10	0
4000	1	13	4	2	1	8	0	2	10	0	3	6	8	5	0	6	13	4	10	0	0	
5000	2	1	8	2	12	1	0	3	2	6	4	3	4	6	5	0	8	6	8	12	10	0
6000	2	10	0	3	2	6	0	3	15	0	5	0	0	7	10	0	10	0	0	15	0	0
7000	2	18	4	3	12	11	0	4	17	6	5	16	8	8	15	0	11	13	4	17	10	0
8000	3	6	8	4	3	4	0	5	0	0	6	13	4	10	0	0	13	6	8	20	0	0
9000	3	15	0	4	13	9	0	5	12	6	7	10	0	11	5	0	15	0	22	10	0	0
10000	4	3	4	5	4	2	0	6	5	0	8	6	8	12	10	0	16	13	4	25	0	0

Cash-Tables for Distillers, Tanners, Tapers, &c. 313

Pds, or Yds, or Gall. &c.	At 8 d.	At 9 d.	At 10 d.	At 11 d.	At 1 s.	At 1 s. 1 1/2	At 1 s. 2 d.	At 1 s. 6 d.
	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d.	l. s. d. q.	l. s. d.	l. s. d.
1	0 0 8	0 0 9	0 0 10	0 0 11	0 1 0	0 1 1 2	0 1 2	0 1 6
2	0 1 4	0 1 6	0 1 8	0 1 10	0 2 0	0 2 3 0	0 2 4	0 3 0
3	0 2 0	0 2 3	0 2 6	0 2 9	0 3 0	0 3 4 2	0 3 6	0 4 0
4	0 2 8	0 3 0	0 3 4	0 3 8	0 4 0	0 4 6 0	0 4 8	0 6 0
5	0 3 4	0 3 9	0 4 2	0 4 7	0 5 0	0 5 7 2	0 5 10	0 7 6
6	0 4 0	0 4 6	0 5 0	0 5 6	0 6 0	0 6 9 0	0 7 0	0 9 0
7	0 4 8	0 5 3	0 5 10	0 6 5	0 7 0	0 7 10 2	0 8 2	0 10 6
8	0 5 4	0 6 0	0 6 8	0 7 4	0 8 0	0 8 0 9	0 9 4	0 12 0
9	0 6 0	0 6 9	0 7 6	0 8 3	0 9 0	0 10 1 2	0 10 6	0 13 6
10	0 6 8	0 7 6	0 8 4	0 9 2	0 10 0	0 11 3 0	0 11 8	0 15 0
11	0 7 4	0 8 3	0 9 2	0 10 1	0 11 0	0 12 4 2	0 12 10	0 16 6
12	0 8 0	0 9 0	0 10 0	0 11 0	0 12 0	0 13 6 0	0 14 0	0 18 0
13	0 8 8	0 9 9	0 10 10	0 11 11	0 13 0	0 14 7 2	0 15 2	0 19 6
14	0 9 4	0 10 6	0 11 8	0 12 10	0 14 0	0 15 9 0	0 16 4	1 1 0
15	0 10 0	0 11 3	0 12 6	0 13 9	0 15 0	0 16 10 2	0 17 6	1 2 6
16	0 10 8	0 12 0	0 13 4	0 14 8	0 16 0	0 18 0 0	0 18 8	1 4 0
17	0 11 4	0 12 9	0 14 2	0 15 7	0 17 0	0 19 1 2	0 19 10	1 5 6
18	0 12 0	0 13 6	0 15 0	0 16 6	0 18 0	1 0 3 0	1 1 6	1 7 0
19	0 12 8	0 14 3	0 15 10	0 17 5	0 19 0	1 1 4 2	1 2 2	1 8 6
20	0 13 4	0 15 0	0 16 8	0 18 4	0 20 0	1 2 6 0	1 3 4	1 10 0
21	0 14 0	0 15 9	0 17 6	0 19 3	1 1 0	1 3 7 2	1 4 6	1 11 6
22	0 14 8	0 16 6	0 18 4	1 0 2	1 2 0	1 4 9 0	1 5 8	1 13 0
23	0 15 4	0 17 3	0 19 2	1 1 1	1 3 0	1 5 10 2	1 6 10	1 14 6
24	0 16 0	0 18 0	1 0 0	1 2 0	1 4 0	1 7 0 0	1 8 0	1 16 0
25	0 16 8	0 18 9	1 0 10	1 2 11	1 5 0	1 8 1 2	1 9 2	1 17 6
26	0 17 4	0 19 6	1 1 8	1 3 10	1 6 0	1 9 3 0	1 10 4	1 19 0
27	0 18 0	1 0 3	1 2 6	1 4 9	1 7 0	1 10 4 2	1 11 6	2 0 6
28	0 18 8	1 1 0	1 3 4	1 5 8	1 8 0	1 11 6 0	1 12 8	2 2 0
29	0 19 4	1 1 9	1 4 2	1 6 7	1 9 0	1 12 7 2	1 13 10	2 3 6
30	1 0 0	1 2 6	1 5 0	1 7 6	1 10 0	1 13 9 0	1 15 0	2 5 0
40	1 6 8	1 10 0	1 13 4	1 16 8	2 0 0	2 5 0 0	2 6 8	3 0 0
50	1 13 4	1 17 6	2 1 8	2 5 10	2 10 0	2 16 3 0	2 18 4	3 15 0
60	2 0 0	2 5 0	2 10 0	2 15 0	3 0 0	3 7 6 0	3 10 0	4 10 0
70	2 6 8	2 12 6	2 8 4	3 4 2	3 10 0	3 18 9 0	4 1 8	5 5 0
80	2 13 4	3 0 0	3 6 8	3 13 4	4 0 0	4 10 0 0	4 13 4	6 0 0
90	3 0 0	3 7 6	3 15 0	4 2 0	5 0 0	5 10 0 0	5 16 0	6 15 0
100	3 6 8	3 15 0	4 3 4	4 11 8	5 0 0	5 12 6 0	5 18 8	7 10 0
200	6 13 4	7 10 0	8 6 8	9 3 4	10 0 0	11 5 0 0	11 13 4	15 0 0
300	10 0 0	11 5 0	12 10 0	13 15 0	15 0 0	16 17 6 0	17 10 0	22 10 0
400	13 6 8	15 0 0	16 13 4	18 6 8	20 0 0	22 10 0 0	23 6 8	30 0 0
500	16 13 4	18 15 0	20 16 8	22 18 4	25 0 0	28 2 6 0	29 3 4	37 10 0
600	20 0 0	22 10 0	25 0 0	27 10 0	30 0 0	33 15 0 0	35 0 0	45 0 0
700	23 6 8	26 5 0	29 3 4	32 1 8	35 0 0	39 7 6 0	40 16 8	52 10 0
800	26 13 4	30 0 0	33 6 8	36 13 4	40 0 0	45 0 0	46 13 4	60 0 0
900	30 0 0	33 15 0	37 10 0	41 5 0	45 0 0	50 12 6 0	52 10 0	67 10 0
1000	33 6 8	37 10 0	41 13 4	45 16 8	50 0 0	56 5 0 0	58 6 8	75 0 0

314 Cash-Tables for Distillers, Tanners, Tawners, &c.

Pds, or Yds, or Gall. &c.	At 2 s.	At 2s. 9d.	At 3 s.	At 4s. 8d.	At 6s. 2d.	At 8s.	At 8s. 8d.	At 11s.
1	0 2 0	0 2 9	0 3 0	0 4 8	0 6 2	0 8 0	0 8 8	0 11 4
2	0 4 0	0 5 6	0 6 0	0 9 4	0 12 4	0 16 0	0 17 4	1 3 0
3	0 6 0	0 8 3	0 9 0	0 14 0	0 18 6	1 4 0	1 6 0	1 15 0
4	0 8 0	0 11 0	0 12 0	0 18 8	1 4 8	1 12 0	1 14 8	2 6 0
5	0 10 0	0 13 9	0 15 0	1 3 4	1 10 10	2 0 0	2 3 4	2 18 0
6	0 12 0	0 16 6	0 18 0	1 8 0	1 17 0	2 8 0	2 12 0	3 10 0
7	0 14 0	0 19 3	1 1 0	1 12 8	2 3 2	2 16 0	3 0 8	4 1 0
8	0 16 0	1 2 0	1 4 0	1 17 4	2 9 4	3 4 0	3 9 4	4 11 0
9	0 18 0	1 4 9	1 7 0	2 2 0	2 15 6	3 12 0	3 18 0	5 3 0
10	1 0 0	1 7 6	1 10 0	2 6 8	3 1 8	4 0 0	4 6 8	5 11 0
11	1 2 0	1 10 3	1 13 0	2 11 4	3 7 10	4 8 0	4 15 4	6 4 0
12	1 4 0	1 13 0	1 16 0	2 16 0	3 14 0	4 16 0	5 4 0	7 0 0
13	1 6 0	1 15 9	1 19 0	3 0 8	4 0 2	5 4 0	5 12 8	7 11 0
14	1 8 0	1 18 6	2 2 0	3 5 4	4 6 4	5 12 0	6 1 4	8 3 0
15	1 10 0	2 1 3	2 5 0	3 10 0	4 12 6	6 0 0	6 10 0	8 15 0
16	1 12 0	2 4 0	2 8 0	3 14 8	4 18 8	6 8 0	6 18 8	9 6 0
17	1 14 0	2 6 9	2 11 0	3 19 4	5 4 10	6 16 0	7 7 4	9 18 0
18	1 16 0	2 9 6	2 14 0	4 4 0	5 11 0	7 4 0	7 16 0	10 11 0
19	1 18 0	2 12 3	2 17 0	4 8 8	5 17 2	7 12 0	8 4 8	11 1 0
20	2 0 0	2 15 0	3 0 0	4 13 4	6 3 4	8 0 0	8 13 4	11 11 0
21	2 2 0	2 17 9	3 3 0	4 18 0	6 9 2	8 8 0	9 2 0	12 3 0
22	2 4 0	3 0 6	3 6 0	5 2 8	6 15 8	8 16 0	9 10 8	12 11 0
23	2 6 0	3 3 3	3 9 0	5 7 4	7 1 10	9 4 0	9 19 4	13 4 0
24	2 8 0	3 6 0	3 12 0	5 12 0	7 8 0	9 12 0	10 8 0	14 0 0
25	2 10 0	3 8 9	3 15 0	5 16 8	7 14 2	10 0 0	10 16 8	14 11 0
26	2 12 0	3 11 6	3 18 0	6 1 4	8 0 4	10 8 0	11 5 4	15 0 0
27	2 14 0	3 14 3	4 1 0	6 6 0	8 6 6	10 16 0	11 14 0	15 11 0
28	2 16 0	3 17 0	4 4 0	6 10 8	8 12 8	11 4 0	12 2 8	16 0 0
29	2 18 0	3 19 9	4 7 0	6 15 4	8 18 10	11 12 0	12 11 4	16 11 0
30	3 0 0	4 2 6	4 10 0	7 0 0	9 5 0	12 0 0	13 0 0	17 0 0
40	4 0 0	5 10 0	6 0 0	9 6 8	12 6 8	16 0 0	17 6 8	23 0 0
50	5 0 0	6 17 6	7 10 0	11 13 4	15 8 4	20 0 0	21 13 4	29 0 0
60	6 0 0	8 5 0	9 0 0	14 0 0	18 10 0	24 0 0	26 0 0	35 0 0
70	7 0 0	9 12 6	10 10 0	16 6 8	21 11 8	28 0 0	30 6 8	40 0 0
80	8 0 0	11 0 0	12 0 0	18 13 4	24 13 4	32 0 0	34 13 4	46 0 0
90	9 0 0	12 7 6	13 10 0	21 0 0	27 15 0	36 0 0	39 0 0	52 0 0
100	10 0 0	13 15 0	15 0 0	23 6 8	30 16 8	40 0 0	43 6 8	58 0 0
200	20 0 0	27 10 0	30 0 0	46 13 4	61 13 4	80 0 0	86 13 4	116 0 0
300	30 0 0	41 5 0	45 0 0	70 0 0	92 10 0	120 0 0	130 0 0	175 0 0
400	40 0 0	55 0 0	60 0 0	93 6 8	123 6 8	160 0 0	173 6 8	233 0 0
500	50 0 0	68 15 0	75 0 0	116 13 4	154 3 4	200 0 0	216 13 4	291 0 0
600	60 0 0	82 10 0	90 0 0	140 0 0	185 0 0	240 0 0	260 0 0	350 0 0
700	70 0 0	96 5 0	105 0 0	163 6 8	215 16 8	280 0 0	303 6 8	408 0 0
800	80 0 0	110 0 0	120 0 0	186 13 4	246 13 4	320 0 0	346 13 4	476 0 0
900	90 0 0	113 15 0	135 0 0	210 0 0	277 10 0	360 0 0	390 0 0	525 0 0
1000	100 0 0	117 10 0	150 0 0	233 6 8	308 6 8	400 0 0	435 6 8	583 0 0

C H A P. VIII.

Of the Duty and Business of those Officers, who survey Vinegar-Makers and Sweets-Makers, so as to prevent the Makers from evading the Duty, and defrauding the Revenue; ALSO of the Rise and Progress of the Excise on Vinegar, Sweets, or Made Wines; and Mead or Methelin.

The Officer's Duty, who surveys Vinegar-Makers.

WHEN the Vinegar-Maker brews his own Preparatives, the Officer must take a Gauge of the Worts, and make a Charge after the same Manner as on a common Brewer, excepting that the Vinegar-Maker is to have no Allowance for Wash or Waste.

The Officer must observe, that all Liquors, (*viz.*) Stale Beer, Returns of Cyder, Beer, Ale, Verjuice, or any other Liquors proper to be made into Vinegar, which are found in the Possession, or Custody of any common Vinegar-Maker, are to be charged as Vinegar, except such Ale, Beer, or other Liquors as are to be drank in the Family; and these the Vinegar-Makers must keep separate and apart for that Purpose.

The Liquors to be esteemed Vinegar.

The Law obliges all Vinegar-Makers, when they receive any of the aforesaid Liquors, to shew them to the Officer before they offer to mix any Part thereof with Rape, or with other Materials, or Liquors already in their Custodies. And the Officer is to take Notice, that no Vinegar-Maker must receive into his Custody any Liquors proper for making Vinegar, nor must he carry or deliver out Vinegar in Casks, or by the Gallon, without giving Notice to the Officer, unless from *Michaelmas* to *Lady-Day*, betwixt the

Must be seen by the Officer before mixed with Rape, &c.

Hours of seven in the Morning and Five at Night; and from *Lady-Day* to *Michaelmas*, between Five in the Morning and Seven in the Evening. The Officer must take Gauges of the Worts of those Vinegar-Makers that brew these Preparatives, as he does at Victuallers, and he must charge the same as Vinegar in Barrels, &c. after the Rate of 34 Gallons Beer Measure to the Barrel. The Officer must stock every Day, (if possible) taking the wet Inches of the Store Casks, as he does at Distillers; and must put a V. over such Casks of Liquor as have been drawn off from the Rapes, to distinguish it from the Preparatives that have not been upon the Rapes. The Officer is to stock the Rape-Casks by the Sound, as Victuallers Casks are done, (*viz.*) $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, or

Which the Statute Hours.

Must gauge the Worts, &c.

PART II. **X** **F; how,**

Must stock,

Must phial the
Rape.
Different Ways
of souring.

F; for the Rape being mixed with the Preparative, will admit of no other Way of stocking than this: Great Care is necessary in examining the Liquor in the Rape-Casks, or Tubs; for that at the Bottom and Top may be fine and clean old Vinegar, and yet the Middle may be otherwise, occasioned by stale Beer, Cyder, or Wine being privately brought in, and put into the Rape unknown to the Officer, in order to run the Duty; but, by means of a Phial, it may be discovered; for in the Phial it will appear foul, and of a different Colour. Vinegar-Makers have different Methods of Souring their Preparatives for Vinegar; some Makers do it by laying their Casks in the Sun, with the Bungs open, during the Summer; and others do it by keeping them in Stoves. The Officer is to understand, that the Use of the Rape is to help to eager the Preparative, and to give it a Flavour, and also to fine it. The Officer who is appointed to attend at a Vinegar-yard to see the Liquors, &c. proper to be made into Vinegar received, and the Vinegar delivered out, must not fail to give his Attendance there, from *Michaelmas* to *Lady-Day*, half an Hour before Seven in the Morning, and half an Hour after Five at Night; and from *Lady-Day* to *Michaelmas*, half an Hour before Five in the Morning, and half an Hour after Seven in the Evening; and upon receiving in such Liquors, &c. proper to be made into Vinegar, he must then enter in his Stock-Book a true Gauge thereof, as also the Number of Hogheads and Half-Hogheads of Vinegar that are sent out, and compare the same with the whole Stock daily taken; and when brewing he must not leave the said Place till he has got Gauges of the whole Worts: And at his going off Duty at Night, or coming on in the Morning, he must make careful Observations to discover whether any Fraud has been committed in his Absence, of which he is to acquaint his superior Officer. The Officer is to take the Depth, and Content or Area of each Tub, Cask, or Rape, and enter them in the Book; he must also take and enter the Height of the false Bottom, if there be any. *N. B.* The false Bottom is a Board full of Holes, which is set about eleven Inches, more or less, from the Bottom, to support the Rape; so that what is below the false Bottom is only Liquor. The Officer, when he discovers a Fraud by Liquor being privately brought in, and putting it on the Rape without acquainting him with it, he must character the Rape-Tub thus, \therefore to signify it to be new come in, and he must take the following Method for charging it. In case the Rape-Tub is full, he must compute the Quantity that it holds above the false Bottom; but in case it be not full, he must take the dry Inches to the Surface of the Liquor, and compute the Content between the false Bottom and that Surface; and if it be a new Rape, he must take two Thirds of that

Of marking and
discharging Li-
quor that is
brought in pri-
vately.

that Content; but if an old Rape, he must take one Half, and thereto he must add the solid Quantity of Liquor below the false Bottom.

Example. The Rape-Tub being full, the Content of } Gall.
it above the false Bottom is 188, the Half whereof is } 94
94, (it being an old Rape) _____

The Content of the solid Liquor below the false }
Bottom is 33 _____ } 33

The Total 127

Bar. Gall.

Or— $3\frac{1}{2}$ 8

The Officer is to observe, that the Quantity *above* or *below* the false Bottom is here cast up as an *Ullage*.



X 2 A Cash

A Cash-Table for Vinegar-Makers, at 8s. 9d. per Barrel, by the late Mr. John Downer, General Surveyor in the Distillery.

Bar.	l.	s.	d.	Bar.	l.	s.	d.	Bar.	l.	s.	d.
1	0	2	2 1								
2	0	4	4 2								
3	0	6	6 3								
4	0	8	8 9	31	13	11	3	61	26	13	9
5	0	10	10 6	32	14	0	0	62	27	2	6
6	1	6	3	33	14	8	9	63	27	11	3
7	1	15	0	34	14	17	6	64	28	0	0
8	2	3	9	35	15	6	3	65	28	8	9
9	2	12	6	36	15	15	0	66	28	17	6
10	3	1	3	37	16	3	9	67	29	6	3
11	3	10	0	38	16	12	6	68	29	15	0
12	3	18	9	39	17	1	3	69	30	3	9
13	4	7	6	40	17	10	0	70	30	12	6
14	4	16	3	41	17	18	9	71	31	1	3
15	5	5	0	42	18	7	6	72	31	10	0
16	5	13	9	43	18	16	3	73	31	18	9
17	6	2	6	44	19	5	0	74	32	7	6
18	6	11	3	45	19	13	9	75	32	16	3
19	7	0	0	46	20	2	6	76	33	5	0
20	7	8	9	47	20	11	3	77	33	13	9
21	7	17	6	48	21	0	0	78	34	2	6
22	8	6	3	49	21	8	9	79	34	11	3
23	8	15	0	50	21	17	6	80	35	0	0
24	9	3	9	51	22	6	3	90	39	7	6
25	9	12	6	52	22	15	0	100	43	15	0
26	10	1	3	53	23	3	9	200	87	10	0
27	10	10	0	54	23	12	6	300	131	5	0
28	10	18	9	55	24	1	3	400	175	0	0
29	11	7	6	56	24	10	0	500	218	15	0
30	11	16	3	57	24	18	9	600	262	10	0
31	12	5	0	58	25	7	6	700	306	5	0
32	12	13	9	59	25	16	3	800	350	0	0
33	13	2	6	60	26	5	0	900	393	15	0

*The Officer's Duty * who surveys Sweets-Makers.*

THE Officer is to keep Stock upon Sweets-Makers, by taking the Depth and Content of the Cask wherein they steep their Fruit; and in Stocking, he must, on each Survey, enter the dry Inches thereof to the Surface of the Liquor; or when he cannot easily come at such Gauge, he must enter the Proportion of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, or *F.* as they appear to be by sounding the Outside of the Cask. And every Time it is fresh charged with Fruit, he must, over the Figure, put *Fr.* and \therefore three Dots, which shews it to be new. The Officer must be very careful in examining the Steeps with a Phial, because, at the Top of the Fruit, and Bottom of Steep Casks, the Liquor or Sweets may be rich, luscious Sweets, when, at the same Time, that which is in the Middle, has no other Strength and Sweetness than the Water put first upon the Fruit, the other Sweets having been drawn off, and conveyed away, by which crafty Practice they frequently run the Duty. Sweets-makers likewise have got another Way to deceive and impose upon the Officer, by setting a Steep again with fresh Fruit, which has been drawn off, and putting two or three Cans on the Top thereof, of the small Sweets that came last off from every Steep so drawn off, and upon it to lay some of the old Rape, or spent Fruit, a few Inches deep, until the Liquor on the new Fruit, receive a sufficient Strength and Sweetness. The Officer must keep Stock on all Sweets drawn off the Steep, &c. and he must be careful in tasting and palating: So that new Sweets made of Sugar, or Sweets clandestinely drawn off the Steep, be not brought into the Stock under his Survey, of which the Duty is not charged; and this the Sweets-makers may effect by making a Decrease in Stock of such Sweets as have been charged with the Duty, which he may send away unknown to the Officer, and make that Stock good again to the same Inch wet with the new Sweets, and upon which new Sweets, to prevent the Officer's discovering the Fraud, the Maker pours a small Quantity of the Sweets; which were before in Stock, but the new Sweets lie under it not incorporated together; the Officer therefore must always drop his Phial down to the Bottom of the Cask, so that if there is any Fraud, it will be easily discovered, by the Colour and Taste thereof. To prevent such Abuses, the Officer, when he discovers that a Steep has been drawn off, and the Sweets clandestinely removed, so that it is impossible for him to have a Gauge thereof, he may take a *presumptive* Charge from the Steep's Content, or proportionably, according to the Gauge he had the Steep at. It is customary to charge $\frac{1}{2}$ or $\frac{3}{4}$ of the Quantity in Gallons, from the Gauge taken at the Surface of the Liquor, (according to the Quantity of the Fruit steeped) allowing the rest for the Fruit. The Charge on Sweets is to be made by Wine Measure, viz. $31\frac{1}{2}$ Gallons to the Barrel.

X 3

Cash-

* See also Page 321.

CASH-TABLE for Sweets at 12s. per Barrel.

Gall.	l.	s.	d.	q.	Bar.	l.	s.	d.	Bar.	l.	s.	d.
$\frac{1}{4}$	0	0	1	0.571	$\frac{1}{4}$	0	3	0	28	16	16	0
$\frac{1}{2}$	0	0	2	1.142	$\frac{1}{2}$	0	6	0	29	17	8	0
$\frac{3}{4}$	0	0	3	1.713	$\frac{3}{4}$	0	9	0	30	18	0	0
1	0	0	4	2.285	1	0	12	0	40	24	0	0
2	0	0	9	0.571					50	30	0	0
3	0	1	1	2.857								
4	0	1	6	1.143	2	1	4	0	60	36	0	0
5	0	1	10	3.428	3	1	16	0	70	42	0	0
6	0	2	3	1.714	4	2	8	0	80	48	0	0
7	0	2	8	0.	5	3	0	0	90	54	0	0
8	0	3	0	2.285	6	3	12	0	100	60	0	0
9	0	3	5	0.571	7	4	4	0	110	66	0	0
10	0	3	9	2.857	8	4	16	0	120	72	0	0
11	0	4	2	1.143	9	5	8	0	130	78	0	0
12	0	4	6	3.428	10	6	0	0	140	84	0	0
13	0	4	11	1.714	11	6	12	0	150	90	0	0
14	0	5	4	0.	12	7	4	0	160	96	0	0
15	0	5	8	2.285	13	7	16	0	170	102	0	0
16	0	6	1	0.571	14	8	8	0	180	108	0	0
17	0	6	5	2.857	15	9	0	0	190	114	0	0
18	0	6	10	1.143	16	9	12	0	200	120	0	0
19	0	7	2	3.428	17	10	4	0	210	126	0	0
20	0	7	7	1.714	18	10	16	0	220	132	0	0
21	0	8	0	0.	19	11	8	0	230	138	0	0
22	0	8	4	2.285	20	12	0	0	240	144	0	0
23	0	8	9	1.571	21	12	12	0	250	150	0	0
24	0	9	1	2.857								
25	0	9	6	2.143	22	13	4	0	260	156	0	0
26	0	9	10	3.428	23	13	16	0	270	162	0	0
27	0	10	3	1.714	24	14	8	0	280	168	0	0
28	0	10	8	0.	25	15	0	0	290	174	0	0
29	0	11	0	2.285	26	15	12	0	300	180	0	0
30	0	11	5	0.571	27	16	4	0	400	240	0	0
31	0	11	9	2.857								
$31\frac{1}{2}$	0	12	0	0.								
Factor .019047 Gall.					Factor 6 Barrels.							

N. B. If any Number of Gallons are multiplied by .019047, or any Number of Barrels are multiplied by 6, it will give the neat Duty.

VINEGAR.

VINEGAR-MAKERS, &c.

SOME Part of the Vinegar-Maker and Sweets-Maker's Duty being originally interwoven with that of the Brewer and Distiller, it is proper that *Chap. IV.* and *VII.* of this *Second Part* should be likewise consulted.

IN the Year 1696, it was ordained, That no Maker of Vinegar or Sweets should sell, deliver, or carry out any *Vinegar* or *Sweets*, without first giving Notice to the proper Officer, to the Intent that he may gauge, and take an Account of the same, but betwixt the Hours of Five in the Morning and Eight in the Evening, from the 29th of *September* to the 25th of *March*; and from the 25th of *March* to the 29th of *September*, betwixt the Hours of Three in the Morning and Nine in the Evening, * upon Pain of forfeiting 40s. for every Barrel. And 1696.

THREE Years after, *Anno* 1699, for the avoiding of Disputes which might arise concerning Liquors preparing for Vinegar, it was ordained, That after the 10th of *May* 1699, all stale Beer, Returns of Beer, or Ale, Cyder, Verjuice, or any other Liquors proper to be made into Vinegar, which should be found in the Custody or Possession of any common Vinegar-Maker, should be deemed to be Vinegar, or Liquors preparing for Vinegar, except such Beer, Ale, or other Liquors as are to be drank in his Family, and which must be kept separate and apart for that Purpose. AND no Vinegar-Maker must receive any Liquors proper for Vinegar, or carry or deliver out any Vinegar in Casks, or by the Gallon, without Notice to the proper Gauger, but betwixt the Hours of Seven in the Morning and Five at Night, from the 29th of *September* to the 25th of *March*; and betwixt the Hours of Five in the Morning and Seven at Night from the 25th of *March* to the 29th of *September*, upon Pain of forfeiting the Sum of 50l. for every such Offence. AND every Vinegar-Maker receiving into his Custody any of the Liquors aforesaid, must shew the same to the proper Gauger before he mix them, or any Part thereof, with any other Liquors, Rape, or other Materials, on Pain of forfeiting 20l. for every such Omission or Neglect. IF any Vinegar-Maker shall make use of any Store-house, Ware-house, Cellar, or other Place, for making or keeping any Vinegar, Vinegar-Beer, or Liquors preparing for Vinegar, without first giving Notice thereof at the next Office of Excise, he shall forfeit 50l. for every such private Store-house, Ware-house, Cellar, and other Place so made use of without such Notice. The Duties on Vinegar, and Vinegar-Beer, having been computed by different Measures, Disputes have arisen about charging the same; to remedy which, it was ordained, that 34 Gallons *Ale-Measure* should be accounted and returned by the Gauger for a Barrel of Vinegar, Vinegar-Beer, or Liquor preparing for Vinegar, notwithstanding any former Law or Custom to the contrary. 1699.

SWEETS-MAKERS.

IN the Year 1697, it was ordained, That after the 20th of *June* 1697, no Sweets-Maker, or other Person making Sweets, should erect, set up, or make use of any Steeping-Tub, Ton, Cask, or other Vessel, for making or keeping Sweets, without first giving Notice thereof at the next Excise-Office, upon Pain of forfeiting 50l. and for concealing Sweets, the Penalty is 40s. per Barrel. 1697.

X 4

* See the Hours alter'd, *Anno* 1699.

Note,

Note. No Sweets-Maker shall deliver, or carry out any Sweets either in whole Casks, or by the Gallon, without giving Notice to the Officer but between the Hours of 5 in the Morning and 8 at Night, from *Michaelmas* to *Lady-Day*; and between 3 in the Morning and 9 at Night, from *Lady-Day* to *Michaelmas*.

TWO Years after, *Anno* 1699, all Liquors made by Infusion, Fermentation, or otherwise, from foreign Fruit or Sugar, or from Fruit or Sugar mixed with other Materials, and commonly made use of for recovering, increasing, or making of any Kinds of Wine or Cyder, or of any Liquor called Wine, were declared to be *Sweets*.

1699. AND it was also ordained, That all Persons retailing any of the Liquors aforesaid, having above two Gallons of Sweets in their Custody, shall be deemed Makers of Sweets for sale. And all that were Refiners of Sugar before the first of *June* 1699, who should enter into a Bond for 500*l.* not to sell, deliver out, or dispose of any Sweets or Liquors, commonly called Syrups, made from Sugar, (except *Melasses*;) or use them in making, increasing, or improving Wine, Cyder, Perry, or any Liquor called Wine, should not be chargeable with the Duties of Sweets or Syrups till they are sold, or made use of.

TWENTY Years after, *Anno* 1719, It having been experienced that Makers of Sweets for sale, when they have Occasion to deliver Sweets to Vintners and others, take the same from their Stock-
1719. Casks of Sweets, and, having so done, immediately make Quantities of new Sweets, and mix such new Sweets with the remaining Part of their Stock of old Sweets, without the least Knowledge of the Officer, who should charge the Duties for such new Sweets: TO remedy which it was ordained, That after the first Day of *August*, 1720, if any Sweets made for sale, for which the Duties have been duly paid, or charged by the proper Officer, shall be intended to be removed from one Place to another, the Officer from whence such Sweets are to be removed, shall, upon Request, give a Certificate, or Permit, under his Hand, expressing the Quantity and Qualities of such Sweets, and the Name of the Person from and to whom such Sweets are to be sent, and this without any Fee or Reward; and if any Maker of Sweets for sale shall remove, or cause to be removed any Sweets, or if any Vintner shall receive into his Custody or Possession, any Sweets without such a Permit or Certificate, such Maker of Sweets for sale, and such Vintner, shall respectively forfeit 10*s.* for every Gallon of Sweets so removed; and likewise all such Sweets, which shall be found removed without such Certificate, and the Casks and Vessels containing the same, shall be forfeited, and may be seized by any Officer of Excise; one Half thereof for the Use of the King, and the other Half for the Use of the Person that shall seize the same. AND all Seizures of Sweets, (and the Casks and Vessels containing the same) shall be proceeded upon, and heard in the same Manner as is directed upon Seizures of Brandy, Arrack, Rum, Spirits, or Strong Waters, not exceeding as aforesaid; and such Proceedings shall not be liable to any Appeal or *Certiorari*. AND all Informations, and other Proceedings relating to the several Duties under the Management of the Commissioners of Excise, as also before Justices of the Peace, shall be entered and inrolled in *England*. AND if, upon any Trial, any Question shall arise relating to the Duties of Excise or Customs; or to any Penalty, Seizure, or Forfeiture relating to the same

same; or concerning the keeping of any Office of Excise; or whether any of the Defendants be an Officer for the said Duties; or either of them; that in every such Case, it shall be sufficient to shew that such Person was actually exercising of and employed in such Office or Offices respectively, at the Time when the Matter in Question, upon such Trial, did happen, without producing any one to prove the Names of the respective Commissioners to any Commissions, in the Cases abovementioned, to be their Hand-Writing. AND all Persons prosecuted for any Thing done in Execution of the Premises, might plead the general Issue, and give the special Matter in Evidence; and if the Plaintiff should be nonsuited, or there should be a Verdict for the Defendant, he shall have full Costs of Suit.

EIGHTEEN Years after, *Anno 1737*, it was ordained, That after the 24th of *June 1737*, the Duty of 36s. a Barrel upon Sweets should cease and determine; and that instead thereof, there should be paid by the Maker a Duty of 12s. for every Barrel of Liquor made for sale in *Great-Britain* by Infusion, Fermentation, or otherwise, from foreign Fruit or Sugar; or from *British* Fruit or Sugar; or from Fruit or Sugar mixed with any other Ingredients or Materials whatsoever, commonly called *Sweets*; or called or distinguished by the Name of *made Wines*; and so in Proportion for a greater or lesser Quantity. AND all Makers of the Liquors called *Sweets*, or *made Wines*, for Sale, shall give Notice to the next Officer of Excise of their Names and Places of Abode, and of every Room and Place made use of for the making or keeping of Sweets or made Wines, on Pain of forfeiting 20*l*. AND all the Powers heretofore given, in relation to the Duties upon Sweets, shall be in Force for the collecting and recovering this Duty, and for the preventing, detecting, and publishing any Frauds relating thereto. AND all the Penalties relating to this Duty, may be levied and mitigated by such Ways and Methods as any Penalty may be levied or mitigated by any of the Laws of Excise; and of which Penalties and Forfeitures, one Half to go to the King, and the other to the Informer. AND if any Person shall be sued for any Thing done in the Execution of the Premises, or any Law of the Excise now in Force, he may plead the general Issue, and give the Matter in Evidence, and he shall have treble Costs, in case of a Verdict for the Defendant; or if the Plaintiff shall be nonsuited.

BUT no Person shall sell made Wines to be drank in their Houses, unless they are first licenced by two Justices of the Peace; for which Licence, if it be found by the Clerks, 2s. 6*d*. only shall be paid him; nor any Fee or other Reward whatsoever to the Clerk of the Peace for entering the same; or on any other Account, on Pain of 5*l*. in case either Justices Clerks, or any Clerk of the Peace, shall ask, receive, or demand any more; but if the Licence is not found by the said Justice's Clerk, then no Fee whatsoever shall be due to him on that Account. AND it was ordained, that no Licence should be granted for the Retailing of any made Wines whatsoever, but to such Persons only as shall keep public Victualling-houses, Inns, Coffee-houses, or Ale-houses.

Wines made by the Owners or Occupiers of *British* Vineyards, from the Juice of *British* Grapes only, are not chargeable with any Duty.

C H A P. IX.

Shewing the Rise and Progress of the Excise on Foreign Brandy, Rum, Arrack, and other Foreign Exciseable Liquors.

SOME Gentlemen may possibly think this Chapter a little unnecessary; but my own Experience having effectually convinced me of its Usefulness, I shall by no Means omit it. And here it is to be observed, that what originally relates to the Subject of this Chapter is so interwoven with what is treated of in CHAPTERS IV. and VII. that those Chapters are also necessary to be consulted.

IN the Year 1663, for the better collecting the Duties of Excise upon all foreign or imported Liquors, it was ordained, That no such Liquors should be landed out of any Ship or Vessel from beyond the Seas, before Entry thereof be made with the Officer, or Collector appointed for the Excise in the Port where the same should be imported, or before the Duty be paid. AND all such foreign Liquors, which shall be landed without a Warrant first signed by the Officer or Collector of Excise of the Port for that Purpose, or without the Presence of such Officers, shall be forfeited, or the Value thereof; one Half to the King, the other Half to the Informer, who shall seize or sue for the same, to be recovered of the Importer or Proprietor of the said Liquors. AND no exciseable Liquors (except Beer, Ale, Cyder, Perry, and Metheglin,) coming by Coast-Cocket, or Certificate, may be landed, or put on Shore, without first making an Entry with the Officer of Excise in the proper Port, upon Pain of forfeiting double the Value of the Liquor so landed, or put on Shore.

SEVEN Years after, Anno 1670, it was declared and ordained, That the Liquor, called Brandy, was a Strong Water, perfectly made, and imported from beyond the Seas, is chargeable with the full Duty imposed upon Strong Water, perfectly made, imported from beyond the Seas, and is not chargeable with the Duty imposed upon Spirits made of Wine or Cyder imported.

TWENTY-TWO Years afterwards, Anno 1692, great Frauds having been carried on by the Importation of Strong Waters, Spirits, Aqua Vitæ, or Brandy, in small Quantities, it was ordained, That 1692. if any Brandy, single or double, after the 20th of March, 1693, should be imported in any Vessel or Cask, which should not contain 60 Gallons at the least, it should be forfeited, or the Value thereof; one Half to the King, the other Half to the Informer, to be recovered of the Importer or Proprietor by Action of Debt, Bill, Complaint, or Information, in any of the Courts at Westminster.

NINE Years after, Anno 1701, for the preventing all secret and unlawful Importation of foreign Spirits, or Brandy, it was ordained, That if any foreign Brandy, or Spirits of any Kind whatsoever, 1701. should, after the 29th of September 1701, be imported, or be brought into any Port, Creek or Haven of this Realm, in any Ship or Vessel under the Burthen of fifteen Tons* (unless it be for the Use of

* See this extended to Ships of 30 and 40 Tons, Page 326; and to those of 100 Tons, Page 338.

of such Seamen on board such Ship or Vessel only, and this not exceeding one Gallon * for each Seaman,) such Brandy or Spirits should be forfeited; one Half to the King, and the other Half to such Person as should seize or sue for the same, by Bill, Plaint, or Information, in any of the King's Courts of Record at Westminster.

ABOUT the same Year, Anno 1701, for the encouraging the Consumption of malted Corn, and for the better preventing the running of French and foreign Brandy, it was ordained, That if any Person should import, land, or deliver out of any Ship, Vessel, or Boat, any French Brandy, before the Duty, payable for the same, had been paid, or secured to be paid, or by Licence from the proper Officer so to do, every Person that shall so do, or be aiding or assisting, or shall conceal the same when landed, shall not only forfeit the Goods so imported; one Half (after Charges of Suit is deducted) to the Crown, and the other Half to the Informer, who shall sue for the same in any of the Courts of Record, by Bill, Plaint, or Information. AND if any Officer belonging to the Excise or Customs, shall connive at, or be concerned in any clandestine Importation, or shall conceal the same or not give Notice to the Commissioners of the Excise or Customs, or shall compound, without Licence, with any Person concerned in the clandestine Importation of French Brandy, such Officer shall not only be rendered incapable of any Office in the Revenues, but shall also forfeit the Sum of 500l. to be recovered and divided as last before-mentioned. 1701.

SEVENTEEN Years after, Anno 1718, it having been observed that the importing of Rum in small Casks, or Vessels, was frequently done with Design, that the same may more easily and clandestinely be carried off, without paying the Duties; to remedy which, it was ordained, That if any Rum should be imported, after the 29th of September 1719, into any Port, Harbour, Haven, or Creek in Great-Britain, in any Cask or Vessel not containing, at the least, 20 Gallons, (except it be only for the Use of the Seamen then on board such Ship or Vessel) all such Rum, or the Value thereof, shall be forfeited, unless it shall appear to the Satisfaction of the principal Officers of the Customs at the Port of Importation, that the Rum so imported in small Casks was for the Use of the Master or Seamen in the Voyage, or that it was imported without Fraud or Concealment; and in every such Case, the Officers are to admit such Rum to an Entry; and it is not forfeited. AND after the 25th of March 1719, if in any case, any foreign Goods should, by any Collier, Fisher-Boat, or other coasting Vessel or Boat, be taken in at Sea, or out of any Ship or Vessel whatsoever, in order to be landed, or put into any other Ship, Vessel, or Boat, without Payment of the Duties, such Goods, Wares, and Merchandizes shall be forfeited, and the Master of such Collier, Fishing-Boat, or other Coastling Vessel or Boat, shall forfeit treble the Value thereof, unless it be in case of Necessity, and of which such Master must immediately make Proof before the chief Officers of the Customs of the first Port where he shall arrive in this Kingdom; and the Master, or other Person, taking Charge of the Ship or Vessel, out of which such Goods should be taken in at Sea, unless in case of Necessity, as aforesaid, shall forfeit treble the Value of such Goods so unshipped; one Half to the King, the other Half to the Informer. 1718.

THE same Year, it was likewise ordained, That after the 25th of March 1719, all Goods, Wares, and Merchandizes, which could be salv'd out of any

* See this altered to Two Gallons, Page 326.

Ship or Vessel that should happen to be forced on Shore, or stranded upon the Coasts of this Kingdom, (not being wrecked Goods, or Jetsham*, Flotsham†, or Lagan‡,) should, after Charges of Salvage and other Charges paid, as aforesaid, be liable to the Payments of the like Customs and other Duties, with such Drawbacks upon Exportation, and the like Allowances and Abatements, as such Goods would by any Law or Laws then in Force be liable unto, and entitled to have, in case the same were regularly imported.

THREE Years after, *Anno 1721*, the Laws then in Force, for preventing the clandestine Importation of prohibited and uncustomed Goods, having been found insufficient for that Purpose, it was ordained, That every Vessel of 15 Tons, or under, bringing any Brandy, Arrack, Rum, Strong Waters, or Spirits, of any kind whatsoever, into any Port or Creek, [except Two Gallons for the Use of each Seaman on board such Ship] should be forfeited, with all her Tackle, Furniture, and Apparel, or the Value thereof, and shall be seized, recovered, broke up and sold: And this Forfeiture was the next Year, *Anno 1722*, extended to Vessels of 30 Tons. AND it appearing that the Intention of the Laws had been eluded by the clandestine Importation of Goods in Ships above the Burthen of 30 Tons; for the preventing of which, it was ordained, That if after the 25th of March 1722, any foreign Brandy, Arrack, Rum, Strong Waters, or Spirits of any kind whatsoever, were imported in any Vessel of 40 Tons, or under, such Ship or Vessel, together with her Tackle, Furniture, and Apparel, and also all such Brandy, Arrack, Strong Waters or Spirits, or the Value thereof, shall be forfeited, and may be seized by any Officer of the Customs or Excise. AND it was ordained, That after the Seizure and Condemnation of such Ship, Vessel, or Boat, the principal Officers of his Majesty's Customs, in the Port or Place where the same had been condemned, are to cause the Hull of such Ship, Vessel or Boat, to be burnt, and wholly destroyed, and the Tackle, Furniture, and Apparel thereof, to be publickly sold to the best Advantage, and the Produce to be divided, as hereafter is directed, the reasonable Charges of prosecuting, selling, and burning the same, being first deducted.

GREAT Frauds having been committed by the Use of Boats, Wherries, Pinnaces, Barges, or Gallies, which were sometimes rowed with six, eight, or twelve Oars, built on Purpose for the smuggling Trade; it was ordained, That after the 25th of March 1722, if any Boat, Wherry, Pinnace, Barge, or Galley, rowing, or built to row with more than four Oars, should be found upon the Water, or in any Barge-house, Work-house, or other Place, within any of the Counties of *Middlesex, Surry, Kent, or Essex*, or in the River of *Thames*, above or below Bridge, or within the Limits of the Ports of *London, Sandwich, or Ipswich*, or the Members or Creeks to them belonging, such Boat, Wherry, Pinnace, Barge, or Galley, with all her Tackle and Furniture, or the Value thereof, should be forfeited, and shall be seized by any Officer of the Customs; and the Owners thereof, or any Person using or rowing such Vessel, shall forfeit 40*l.* and such Boat, Wherry, Pinnace, Barge, or Galley, after Condemnation, must be burnt, and the Tackle, Furniture, and Apparel thereunto belonging sold, and the Produce divided, (Charges of prosecuting, selling,

Jetsham, is where any Thing is cast out of a Ship that is in Danger, and the Ship notwithstanding remains.

Flotsham, is where a Ship is sunk, or cast away, and the Goods are floating upon the Sea.

Lagan, is when Goods that are heavy are thrown over-board, before the Wreck of the Ship, which sinks to the Bottom of the Sea.

selling and burning, being first deducted;) but this Ordinance, (as is hereafter mentioned) does not extend to any royal Barge, or to any Boat in the Service of any Merchant Ship, or to any Barge, or Vessel licensed by the Admiralty; yet Security must be first given, that such Boat shall not be used for running of Goods.

AND all Persons after the 25th of *March* 1722, found passing within 20 Miles of the Coast, knowingly with any foreign Goods landed without due Entry, and Payment of the Duties, and being more than *five* 1722. in Company, or shall carry any offensive Arms, or Weapons, or wear any Vizard Mask, or other Disguise, when passing with such Goods, or shall resist the Officers of the Customs or Excise in the seizing of any sort or kind of run Goods, shall be deemed and taken to be Runners of foreign Goods; and, upon Conviction, shall be adjudged guilty of Felony, and shall be transported as a felon to some of his Majesty's Plantations in *America*, there to remain for the Space of seven Years; and if any Offender shall return into *Great-Britain*, or *Ireland*, before the Expiration of the said Term, they shall suffer Death.

AND it was declared, That if any Runner of foreign Goods, within *two* Months after his Offence, and before his Conviction, should discover to the Commissioners of the Customs or Excise any *two* or *more* of his Accomplices *, so as they, or *two* of them at least, be convicted, and the Value of the Goods so recovered shall exceed 50*l.* he shall receive 40*l.* for each Person so convicted on such Discovery, and he himself shall be acquitted. AND if any other Person makes such Discovery to the said Commissioners within *three Months* after such Offence has been committed, provided the Value of the said Goods so recovered for the Use of the King on such Discovery shall exceed 50*l.* he shall receive 40*l.* for every Offender so discovered and convicted, over and above any other Reward or Recompence, which he may be intitled unto, on Account of the Goods so carried or conveyed away; which respective Reward of 40*l.* is to be paid by the Commissioners of the Customs or Excise out of any public Money in their Hands, [in proportion to the Duties payable on the Goods so run] upon producing a Certificate from the Judge of the Court where the Offender was convicted; and which Payment by any Receiver-General, or Cashier, shall be allowed in his Accounts. AND as this clandestine Trade is greatly encouraged by Persons, who, for their private Lucre, receive and buy the Goods so clandestinely imported, it was therefore ordained, That if any Person should receive or buy any Goods, Wares, or Merchandizes, knowing the same to be clandestinely run or imported, and shall be convicted thereof, upon the Oath of *one* or *more* credible Witnesses, or by the Confession of the Party, before any Justice of the Peace of the County, Division, or Liberty where the Offence shall be committed, or the Offender shall be found, he shall forfeit 20*l.* one Half to the Informer, the other Half to the Poor of the Parish where the Offence was committed, to be levied by Distress and Sale of the Offender's Goods, by Warrant of such Justice before whom he was convicted, as aforesaid, and, for want of Distress, such Justice must commit the Offender to Prison for three Months.

IT having been discovered that several Dealers in foreign Brandy, Spirits, or Strong-Waters, who have large Stocks of the said Liquors, and live near the Sea-Coasts, and thereby furnish themselves with the said Liquors by running them, or procuring them from others that have run them: And as many of those Dealers receive great Quantities of *British* Spirits, which are mostly brought from *London*, with Permits, and which are either drawn so low, or by mixing with Water, that they are of little or no Value; and by these Spirits be-

* See Pages 335, 336, 345, 346.

ing in their Custody, they have Opportunities of increasing their Stocks of foreign run Liquors; and when any Increase is discovered, they pretend to the Officers it has been made by mixing of the said mean *British* Spirits with their foreign Goods, when in truth they really destroy the said *British* Spirits, and never mix it with their *foreign* Goods, by which Means the running of the same is difficult to be discovered; and the pernicious Practice of running foreign Brandy, Spirits, or Strong-Waters, is successfully carried on: For preventing which it was ordained, That after the 25th of *March* 1722, every Dealer in foreign Brandy, Spirits, or Strong-Waters, who then had, or should afterwards receive any *British* Spirits, should keep the same in separate Cellars, or other Places, from their foreign Goods, on Pain of forfeiting 10s. for every Gallon of *British* Spirits, which should be found in any Vault, or other Place, where any Dealer should have or keep any foreign Brandy, Spirits, or Strong-Waters, together with the Casks and Vessels containing such *British* Spirits; and in case any Increase of foreign Brandy, Spirits, or Strong-Waters should be found by any Officer in the Hands of any such Dealer, after his former Survey, it should be deemed foreign Brandy brought in without a Permit, and such Increase shall be forfeited, together with the Casks, and may be seized, unless the Owners make it appear, that such Increase was made by a Mixture of his *British* Spirits with foreign Brandy, in the Officer's Sight, or that it was brought in by Permit, or that it was Part of some condemned Goods, and that the Officer had Notice given him of bringing it in. IT having been discovered, that great Frauds had been carried on by Retailers of foreign Brandy receiving small Quantities of Brandy, less than a Gallon, into their Stock without any Permit, by which Means the Runners of it find Means to dispose of great Quantities of run Brandy, Spirits, or Strong-Waters; for preventing which it was ordained, That if any Retailer, after the 25th of *March* 1722, should receive less than one Gallon into his Custody of foreign Brandy, Spirits, or Strong-Waters, without a Permit signed by the Officer of Excise, signifying that the Duties are paid, or secured to be paid, or that the same had been condemned as forfeited, or was part of some Person's Stock in Hand on the first of *August* 1720, he shall forfeit all such foreign Brandy, Spirits, or Strong Waters so found in his own, or in the Custody of any other Person for his Use, without a Permit, together with the Cask, Bottle, or other Vessel wherein it is contained. AND all the Runners of Brandy, and other customable and prohibited Goods, and the Persons receiving such Brandy or Goods, knowing the same to be run, may be prosecuted by Action, Bill, Complaint, or Information, and a *Capias* shall issue in the first Process, specifying the Sum sued for: And such Person accused shall be obliged to find sufficient Security for his Appearance, and to give sufficient Bail to answer all Penalties incurred by his Offence, if he shall be convicted thereof, or to render his Body to Prison. IT having been ordained, That all Vessels, Boats, Horses, and other Cattle and Carriages whatsoever* employed in the landing, relanding, removing, Carriage or Conveyance of Goods, which were unshipped, the Duties not being first paid or secured, or of any Goods, after a Debenture has been obtained for the Drawback, should be forfeited; but the Charge of condemning such Vessels and Boats, in the Exchequer, and the keeping of such Horses till such Condemnation, being very great, whereby Officers are discouraged from making such Seizures, and the Smugglers encouraged in their illegal Practices; to remedy which it was ordained, That all Seizures made after the 25th of *March* 1722, by Virtue of any Law relating to the Revenue of the Customs

and Excise, may be examin'd into, and proceeded upon, and determined by *two or more* Justices of the Peace residing *near the Place* where the Seizure was made, after such Summons, or publick Notice, as is directed on Page 295, whose Judgments shall be good and effectual in Law, and not liable to any Appeal or *Certiorari*: And the Justices of *London* and *Westminster* are equally empowered as other Justices of the Peace are in their respective Counties.

IT having been found, That foreign Goods are frequently taken in at Sea by Masters of coasting Vessels, who privately land them, to the Prejudice of the Revenue and fair Trader; for Remedy of which, it was ordained, That if any Goods are brought by Coast-Cocket, Transire, Let-pas, or Certificate, from one Port into another in *Great Britain*, and are unshipped to be landed, or put on shore, before the Cocket, Transire, Let-pas, or Certificate, is delivered to the Customer, Collector, or Comptroller, and a Warrant obtained for the landing of such Goods, after the 25th of *March*, the Master, Purser, Boatswain, or other Mariner taking Charge of such Ship or Vessel out of which the Goods shall be landed, consenting thereunto, shall forfeit the Value of the Goods so unshipped. AND if any foreign Goods, or Manufactures, coming Coastwise, shall be landed, without the Presence of an Officer of the Customs, they shall be forfeited, or the Value thereof. AND to clear all Doubts relating to the seizing of Brandy, Arrack, Rum, Spirits, and Strong-Waters, as well foreign as *British*, and also of such foreign exciseable Liquors as are to be declared to be forfeited; it was ordained, That the said Liquors, which have, are, or hereafter shall be forfeited by Virtue of any Law now in being, or that should hereafter be made, together with the Casks, Bottles, or other Package containing the same, shall and may be seized by any Officer of the Customs or Excise respectively, or by any Person duly authorized, but by no other Person whatsoever. AND after the 25th of *March*, all Persons resisting any Officer of the Customs or Excise in the due seizing of any Brandy, Rum, Arrack, Spirits, or Strong-Waters, either *British* or foreign, or any foreign exciseable Liquors, or in rescuing, or causing to be rescued the same, after it has been seized, or who shall endeavour, at, or after such Seizure, to save or destroy the Cask, Vessel, or Bottle, containing the same, shall forfeit 40*l.* for every such Offence. AND if any Person, for having done his Duty, in relation to the Premises, is prosecuted, he may plead the general Issue, and give the special Matter in evidence, and he shall recover treble Costs.

THREE Years after, *Anno 1724*, the clandestine and collusive Importation of Brandy, Arrack, Rum, Spirits, and Strong-Waters, 1724. Coffee, Tea, Cocoa-Nuts, and Chocolate, notwithstanding the many good Laws made to prevent the same, being found to be very prejudicial to the Revenue and fair Trader; for the remedying of which it was ordained, That after the 24th of *June 1725*, any of the Officers of Excise may go on board and enter into any Ship or Vessel whatsoever, in the Limits of any of the Ports of *Great-Britain*, and continue on board the same, and search in like manner as the Officers of the Customs, for all such Brandy, Rum, Arrack, Spirits, or Strong-Waters, or other exciseable Liquors whatsoever; and for all Coffee, Tea, Cocoa-Nuts, Chocolate, and Cocoa-Paste, and to seize all such there found, which by Law shall be forfeited, together with the Casks or other Package containing the same, for the King's Use: AND that in like manner they may seize any of the said Commodities, which, before Entry, and without paying or securing the Duties, shall be

be found unshipping, or unshipped, to be laid on Land, together with the Casks, or other Package whatsoever, in which they are contained. AND it was also ordained, That if any Officer of Excise should have reason to suspect any foreign Brandy, Rum, Arrack, Spirits, or Strong Waters, were fraudulently hid or concealed in any Place whatsoever, though it be entered for keeping the same, or not entered, with an Intent to evade the Duties; and if such Place shall happen to be in the Cities of London or Westminster, or within the Bills of Mortality, then, upon the Oath of the Officer, made before any two or more of the Commissioners of Excise, or in case such Place shall happen to be in any other Part of Great Britain, then, upon the Oath of such Officer, made before one or more Justices of the Peace for the County, Riding, Division, or Place where the Officer shall suspect such Concealment, (which Oath must set forth the Ground of his Suspicion) then, and in such Case, the said Commissioners, or Justices of the Peace respectively, before whom such Affidavit has been made, if he or they shall think it reasonable, by special Warrant under his and their respective Hands and Seals, shall empower such Officer, by Day or by Night; but if in the Night-time, in the Presence of a Constable, or other lawful Peace-Officer, to enter into every such Place where he suspects such Concealment is made, and to seize all such foreign Brandy, Rum, Arrack, Spirits, or Strong Waters, which he shall find so concealed, as forfeited, together with all the Casks, or other Vessels and Things containing the same; and if any Person whatsoever shall obstruct, let, or hinder any Officer for the said Duties in the executing any of the Powers or Authorities hereby given him, every such Person so offending, shall forfeit 100*l.* for every such Offence. AND no Brandy, Rum, Arrack, Spirits, or Strong Waters, whether British or foreign, shall be sold or exposed to sale, but in an entered Place, upon Pain of forfeiting the same, and the Casks, Bottles, or other Vessels containing the same, over and above the Penalties hereof imposed, of 40*s.* * per Gallon. AND it was likewise ordained, That every Person, who shall keep a public House, Shop, Cellar, or Warehouse, for selling of Brandy, Rum, Arrack, Spirits, or Strong-Waters; and shall have in their Custody, or in the Custody of any other Person for their Use, more than 6*lb.* of Tea, Coffee, Chocolate, or Cocoa-Nuts, shall be deemed Dealers in such Goods.

AND many Dealers in Brandy, Rum, Arrack, Spirits, or Strong-Waters, Coffee, Tea, and Cocoa-Nuts, which have been clandestinely imported, to secure such Goods from being seized, frequently take out Permits, to remove such Goods from one Place to another, but, in reality, do not remove them, as authorised by the said Permits, but make use of the Permits to secure the like Quantity of such Goods from being seized, which have been clandestinely imported; to remedy which it was ordained, That any Person who shall take out any Permit after the 24th of June 1725, and shall not really send away the Goods, or return the Permit within the Time limited in the Permit, to the Officer from whom it was had, shall forfeit and lose treble the Value of the Goods mentioned in such Permit, to be estimated according to the highest Rate of the like Commodities at the Time when such Forfeiture shall be incurred; and if, on taking an Account, there does not appear to the Officer to be a sufficient Decrease to answer the removal of the Commodities mentioned in such Permit, the Officer may seize a like Quantity of the Brandy, Arrack,

Arrack, Rum; Spirits, Strong-Waters, Tea, Coffee, and Cocoa-Nuts, out of the Stock of the Person, who took out the Permit. AND no Permit shall be demanded, taken, or received, from any Officer for the Removal of any of the said Goods but by the special Direction, in Writing, of the Person, or his known Servant from whose Stock such Commodities are to be removed, upon Pain of forfeiting 50*l.* for every Offence; and, in Default of Payment, to suffer three Months Imprisonment, without Bail or Mainprize. AND for the more effectual detecting the running of Goods, it was ordained, that any Person or Persons; who shall, knowingly, harbour, keep, or conceal*, or shall knowingly permit or suffer to be harboured, kept or concealed any prohibited or run Goods, or Commodities whatsoever, liable to any Customs or Duties, the Party offending, whether they have or have not, or do or do not claim, or pretend to have any Property or Interest in such Goods or Commodities so harboured, shall forfeit for every Offence all such Goods or Commodities whatsoever so harboured, kept, and concealed; and treble their Value: And the Value of the Goods so forfeited is to be taken at the Rate the best Goods of the like sort are sold for at *London* at the Time of the Forfeiture: AND if any prohibited or run Goods are offered to sale†, or if they shall be pretended to have been run, by the Person offering them to sale: such Goods, together with all the Package whatsoever containing the same, are forfeited, and may be seized by the Person to whom they were so offered to sale, or by any Officer of the Customs or Excise; and if such Goods shall be seized within the Weekly Bills of Mortality (then within 24 Hours;) but if out of the Weekly Bills of Mortality, (then within 48 Hours) after such Seizure, shall be lodged and secured as follows: IF the Goods so seized are either prohibited, or are chargeable with only Duties of Customs, or Import Duties, and not liable unto any Excise or Inland Duties, they shall be lodged in some Warehouse belonging to the Commissioners of the Customs; but if the Goods so seized are liable to any Inland Duties, then they shall be lodged in some Office of *Excise*, or Safe-Place in the Custody of an Officer of *Excise*, near the Place where such Seizure shall be made, and the Person offering such Goods to sale, shall forfeit the Goods, and treble the Value thereof, to be estimated as aforesaid; and all such prohibited or run Goods, with the Package, may be seized from the Buyer by the Seller, or by any Officer of the Customs or Excise, to be lodged and secured, as before appointed, where such Goods are seized from Persons offering the same to sale. AND it was further ordained, That in every Case where any Person whatsoever shall buy ‡ any such prohibited or run Goods, or Commodities whatsoever, or which the Seller, at the Time of Selling thereof, shall pretend to be either prohibited or run, the Person or Persons so buying, besides the Goods and Commodities so bought, shall also forfeit treble the Value thereof, to be estimated as aforesaid: But it is not intended that both Buyer and Seller should forfeit, or be prosecuted for the same Goods; but that the Party, whether Buyer or Seller, who first prosecutes the other with Effect for treble the Value of such Goods, or Commodities, shall be discharged and acquitted from the like Forfeiture or Prosecution: But if a Prosecution be not commenced within one Month after making such Seizure, either by the Seller or Buyer, or by the Party to whom such Goods or Commodities shall be offered or exposed to sale, and afterwards carried on for determining

PART II.

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* See Page 337.

† See Pages 339, 344.

‡ See Page 337.

the same, That then, and in every such Case, the *Warehouse-keeper*, in whose Custody such Goods shall be lodged, may prosecute for the Forfeiture thereof. AND every Constable, and other Ministerial Officer of the Peace, who shall neglect or refuse to go with the Officer of Excise, and shall not be present at the doing of any such Act, where by Law the Presence of a Constable, or other Peace Officer, is or shall be necessary, such Constable, Headborough, or other Ministerial Officer of the Peace, shall forfeit 20*l*. AND it was further ordained, That if upon any Trial of any Information, Action, or Suit whatsoever, relating to the Customs or Excise, any Question should arise, whether the Person be an Officer of, or for any of the said Duties, or for any other Duties whatsoever; or touching any Seizure, Penalty, or Forfeiture relating to the said Duties, or the Collection thereof; or if upon any Trial or Prosecution whatsoever, against any Person for any Thing done in pursuance of any Laws relating to the said Duties; or if upon any Trial for assaulting or obstructing any Officer of the Customs, Excise, or other Duties, in the Execution of his Office; or for refusing any Goods seized by such Officer, any Question shall arise, whether he be an Officer for any of the said Duties, in all such Cases, Proof shall be admitted, that he was reputed to be, and in Fact had exercised such Office, without producing his Commission. AND all Fines, Penalties, and Forfeitures then imposed, shall be sued for, and recovered, or mitigated, as by any other Law relating to the Excise; one Half to the King, the other Half to the Informer. AND if any Person whatsoever liable to the Duties on Soap, or to any Duties of Excise, in order to corrupt or prevail upon any Officer of Excise*, to do or perform any Act or Thing, contrary to his Duty; or to neglect or omit to do or perform any Act or Thing, which such Officer ought to do; or to connive at, or conceal any Fraud relating to the Duties of Excise; in every such Case the Offender shall forfeit 500*l*. for every such Offence, to be sued for, levied, recovered, and mitigated by such Ways and Methods as any Forfeiture is sued for, levied, recovered, or mitigated by any of the Excise Laws: One Half thereof to the King, the other Half to the Poor of such Parish or Place where such Offence shall be committed.

THE very next Year, Anno 1725, it having been found that the Penalties already inflicted for preventing the collusive Seizures of foreign Goods had proved ineffectual, for the better preventing thereof, 1725. with respect to Tea, Coffee, Brandy, Rum, or other foreign Exciseable Liquors, it was ordained, That the Commissioners of the Customs and Excise, or Inland Duties, should cause all such Goods, which should be seized by any of their Officers for unlawful Importation, Non-payment of Duties, or for any other Cause of Forfeiture, to be proceeded against according to the Laws then in Force; and the said respective Commissioners may cause all such Tea and Coffee, which shall be seized in the Limits of London or Edinburgh, and condemned to be sold in those Places, and all such Tea and Coffee seized in any other Ports or Places within this Kingdom, after Condemnation to be brought to, and publicly sold in the said Cities of London or Edinburgh respectively. AND all such foreign Brandy, Rum, or other Exciseable Liquors, which shall be seized for Non-payment of Duties, or for being prohibited to be imported, and condemned, shall be publicly sold to the best Bidder, at such Places as they shall direct and appoint, notwithstanding any Law or Usage to the contrary; and the

* See Page 338.

the Officer of the Customs or Excise, or other Person, that makes such Seizure, is to be allowed, for his Encouragement, one Third of the full Produce arising from the public Sale, free from all Charges of Sale and Condemnation; and the Commissioners of the Customs are to pay into the *Exchequer* the remaining Part of the Produce of such Seizure made by the Officers of the Customs, the Reward to the Officers and Charges of Condemnation being first satisfied, in lieu of his Majesty's Moiety, as then practised; and the Commissioners of Excise must pay the remaining Part of the Produce of such Sales of Seizures made by their Officers after paying the Officer his Reward, and the Charges of Condemnation and Seizure, in the Manner as was then practised, in lieu of the King's Moiety. AND, to prevent Imbezilements after Seizure, it was ordained, That no Officer of the Customs, or other Person shall be entitled to any Reward on any Seizure, unless he gives Notice to the next Officer of Excise, or to the Supervisor of the District, within 48 Hours after Seizure, who is obliged to take a particular Account of such Goods; and if they are afterwards removed, without a Permit signed by the proper Officer, or Supervisor of Excise, from whence they are to be removed, the said Goods shall be forfeited, and may be re-seized by any other Officer of the Customs, or by any Officer of Excise, and may be prosecuted, and recovered accordingly. AND if any Officer of the Customs, or Excise, deals in Tea, Coffee, Brandy, or other exciseable Liquors, he shall forfeit 50*l.* to any Person, who shall sue for the same, and also lose his Employment, and be rendered incapable of any Employment in the Revenue. AND in case any Question shall arise upon any Seizure of foreign Goods, whether the Duties have been paid, or whether they were lawfully imported, or legally compounded for, or condemned; the Proof thereof, in all such Cases, shall lie on the Owner * or Claimer, and not on the Officer, notwithstanding any Law to the contrary. SINCE, in pursuance of several Laws, Informations were exhibited before Justices of the Peace, on Account of Seizures made by the Officers of the Customs and Excise, of Goods clandestinely run, or prohibited, and of Vessels, Boats, Carriages, Horses and other Cattle, in order to their hearing and determining the same, it was ordained, That any one or more Justices of the Peace, where such Seizures are made, shall be impowered to administer an Oath to Persons skilled in the Nature of the Goods, Vessels, Boats, Carriages, or Horses, and other Cattle so seized, to view the same, and to make a Return of the Quantity, Quality, and Value thereof, which shall be publickly sold to the best Bidder, after Condemnation, at such Times and Places as the respective Commissioners aforesaid shall appoint. AND no Tobacco, Wines, Brandy, *East-India* or other Goods, or Commodities, whatsoever, shall be brought from the *Ile of Man* into *Great-Britain* or *Ireland*, or within the Limits of any Ports thereto belonging, *except* they are of the Growth, Product, or Manufacture of that Place, upon Pain of forfeiting the Goods on board, together with the Ship, Vessel or Boat, Tackle, &c. whether Bulk have been broke or not; and every Person carrying such Goods on shore from such Vessel or Boat, or that is aiding and assisting therein, shall suffer six Months Imprisonment, or shall forfeit 100*l.* at the Discretion of the Court where he is convicted of such Offence. AND if, after the 24th of *June* 1726, any foreign Goods are entered for Exportation, other than to the said *Ile of Man*, in order to obtain a Drawback, and are landed in the

Isle of Man, the Merchant or Exporter shall forfeit the said Drawback, and also treble the Value of the Goods, and the Master of the Ship or Vessel shall be liable to the same Penalties, and six Months Imprisonment, without Bail or Mainprize.

AND, after the 24th of *June*, 1726, no Gauger, or Officer of Excise, or of any other Duty, is to be subject to any Penalty or Forfeiture
 1726. for not leaving a Copy of any Charge made by such Gauger or Officer, unless such Copy be required by the Trader in writing; and no Action, Bill, Information, or Plaint lies against any Officer for having neglected to leave a Copy of the Charge*, unless the same shall be commenced before the 27th of *April* 1726. AND all the Forfeitures and Penalties hereby imposed relating to the Revenue, under the Management of the Commissioners of Excise, may be recovered or mitigated by any other Laws now in Force relating to the Revenue of Excise. And all the Fines and Forfeitures hereby imposed which relate to the Revenue, under the Management of the Commissioners of the Customs, may be recovered by Action of Debt, Bill, Plaint, or Information, in the Courts at *Westminster*, or *Exchequer* at *Edinburgh* respectively. And all Penalties and Forfeitures for Offences committed in *Ireland*, shall be recovered as by any Law or Laws in Force in *Ireland*, relating to his Majesty's Revenue there; and one Half of all Forfeitures and Penalties now imposed shall go to the King, and the other Half to the Person who shall seize, inform, or sue for the same, except in such Cases where it is hereby otherwise directed. AND if any Person is sued or molested for putting the Premises in Execution against Offenders, he may plead the General Issue, and may give the Special Matter in Evidence, and he shall have treble Costs.

THREE Years after, *Anno* 1728, for the more expeditious Dispatch of Business at the Chief Office of Excise in *London*, it was ordained,
 1728. That all Complaints and Informations, which should on or after the 24th of *June* 1728, be depending at the Chief Office of Excise, may be heard, adjudged, and determined by any three or more of the Commissioners of Excise; and such Adjudication and Determination shall be valid in Law, as if it had been by all or a Majority of such Commissioners for the Time being; and all such Adjudications and Determinations, after the 24th of *June* 1728, may be executed by Virtue of Warrants under the Hands and Seals, of any three of the Commissioners, whether they shall be the particular Commissioners by whom such Adjudication shall be made, or whether such three Commissioners so setting their Hands and Seals to such Warrant, were Commissioners at the particular Time when such Adjudication shall happen to be made, provided they actually were Commissioners at the Time of setting their Hands and Seals to such Warrant.

FIVE Years after, *Anno* 1733, for the more effectual Execution, by the inferior Officers of the Customs, of the several Laws for preventing the running of Brandies, it was ordained, That when any such Officer shall neglect to seize and prosecute any Vessel, Boats, Horses or other Cattle or Carriage, which shall be forfeited by any of the Laws now in being, every such Officer upon his Appearance, or Default, being thereof lawfully convicted, upon the Oath of one or more creditable Witnesses, or by the Officer's Confession, before one or more Justices of the Peace for the County, Division or Liberty where the Offence shall be committed, or the Offender shall be found, (which Oath one or

* See Page 253, 257, 258.

more Justices are required to administer) the Officer shall forfeit the Sum of 50*l.* for every such Neglect; one Half to the King, and the other Half to the Informer or Prosecutor; which Forfeiture is to be levied by Distress; and, for want of such Distress the Offender shall be committed to Prison for the Space of Six Months, there to remain without Bail or Mainprize.

THREE Years after, *Anno* 1736; there having of late frequently appeared in great Gangs near the Coasts of the Sea, the Shores of navigable Rivers, and divers other Places, many wicked and disorderly Persons carrying Fire-Arms*, or other offensive Weapons, to the Terror of the King's Subjects, in order to be assisting in the clandestine running and carrying away prohibited and uncustomed Goods, and to secure the same after Seizure; and several Officers of the Excise and Customs, and their Assistants, having been wounded, and some of them murdered, and great Quantities of prohibited and uncustomed Goods having been rescued after Seizure, and civil Officers having been forcibly hindered in the Administration of Justice; to remedy such Practices for the future, it was ordained, That after the 24th Day of June 1736, upon Information made on Oath, that three or more Persons are assembled together, armed with Fire-Arms, or other offensive Weapons, for the Purposes aforesaid, before one or more Justices of the Peace, he may grant his Warrant to any Constable whatsoever for apprehending them; and if, upon Examination, such Justice shall find Cause, he may commit them to the County Goal, without Bail, until they shall be discharged by due Course of Law; and upon Conviction of their being assembled and armed to assist in the running, landing, rescuing, or carrying away of any prohibited or uncustomed Goods, they shall be adjudged guilty of Felony, and shall be transported for seven Years; and if such Offenders return into Great Britain or Ireland before the Expiration of such Term, they shall suffer Death. AND for the more effectual discovering such Offenders, every Person apprehending any Person guilty of the last mentioned Offences, is intitled to a Reward of 50*l.* to be paid in such Manner as hereafter is mentioned upon Conviction, and upon producing a Certificate from the Judge before whom such Offender was convicted, AND if any Person shall happen to lose any Limb, or an Eye †, or be otherwise maimed or dangerously wounded, in the apprehending, or in endeavouring to apprehend any such Offender, he shall receive the Sum of 50*l.* over and above any other Reward. AND if any Person is killed in apprehending, or endeavouring to apprehend such Offenders, 50*l.* shall be paid the Executors or Administrators of such Person, upon a Certificate under the Hands and Seals of the Judge of Assize, or of the two next Justices where the Fact was done, of such Person's being so killed; which Certificate, upon sufficient Proof made, he or they are required to give immediately, without any Fee or Reward. IT was also ordained, That if any such Offender should, within three Months after the Offence, and before his or their Conviction, discover to the Commissioners of the Customs or Excise in England or Scotland respectively, two or more of their Accomplices, so that as two of them at least be convicted of such Offence, the Offender so discovering, shall have and receive a Reward of 50*l.* to be paid in such Manner as is hereafter mentioned, and shall be himself clearly discharged of such his Offence.

AND since all the Endeavours of the Legislature have not been able to prevent the carrying prohibited and uncustomed Goods through the Country,

with

with an armed Force, to remedy which for the future, it was ordained, That if *two or more* shall be found passing together within *five Miles* of the Sea, or of any navigable River, with *one or more* Horses, or with any Cart or Carriages, wherein there shall be put or laden above six *lb.* of Tea, or above five Gallons of Brandy, or other Spirits, not having paid the Duty by Law charged thereon, and not having a Permit for the same, or any other foreign Goods or Commodities above the Value of 30*l.* Sterling, landed from any Ship or Vessel, and the Duty not paid, and shall carry any offensive Arms or Weapons, or being masked, or shall forcibly obstruct, assault, oppose, or resist any Officer of the Customs or Excise, in the seizing or securing any Sort of prohibited or run Goods, shall be deemed and taken to be Runners of foreign Goods. AND if any Question shall arise upon any Seizure of foreign Goods, whether the Duties have been paid, or the same were lawfully imported, or legally condemned, the Proof thereof shall lie on the Persons found with the Goods; and all Persons convicted of carrying Goods in such Manner, or for any of the said Offences, shall be adjudged guilty of Felony, and shall be transported as Felons for seven Years; and if they return from Transportation before the Expiration of the Time, they shall suffer Death. AND all such Goods, Wares, and Merchandizes found so carrying, together with the Chests, Boxes, Bags, Casks, and other Package; and all Weapons, as well offensive as defensive, and all the Furniture of the Horses, and other Cattle, and Carriages are lost and forfeited. AND it was ordained, That if any Officer of the Customs or Excise, in the Execution of his Office, shall lose any Limb, or an Eye, or be otherwise maimed or dangerously wounded, by any Offender last mentioned, in the Execution of the Duty of his Office, or if any such Officer, or Person whatsoever, shall be maimed or wounded, as aforesaid, in the apprehending, or endeavouring to apprehend any such Offender, every such Officer, or other Person, shall receive a Reward of 50*l.* over and above any other Reward, which he shall be intitled to: AND if any Person happens to be killed in taking or endeavouring to apprehend any such Offender, then the Sum of 50*l.* shall be paid to the Executors or Administrators of the Person so killed, upon the Certificate of the Judge of Assize, or of the *two next* Justices, as aforesaid, of such Person's being killed, and this over and above any other Reward, which they may be intitled to*. AND any Person discovering his Accomplices to the Commissioners of the Customs or Excise in *England* or *Scotland* respectively, within three Months after any of the said Offences last before mentioned, shall have been committed, he shall receive 50*l.* for each Offender so discovered, and convicted, over and above any other Reward or Recompence, which he may be intitled to by any Law or Statute then in force. AND the Commissioners of the Customs and Excise, in *England* and *Scotland* respectively, are enjoined to cause the several Rewards, before mentioned, to be paid to the Persons intitled thereto, as aforesaid, by the Receiver-General, Cashier, or other proper Officer of the Customs and Excise, upon producing a Certificate under the Judge of the Court's Hand where the Offender was convicted. And if any Disputes shall arise between the Persons intitled to any of the said Rewards, the Commissioners of the Customs or Excise respectively, or the major Part of them, are to adjust their several Shares and Proportions; and the Money so paid by any Receiver-General, Cashier, or other Officer, as aforesaid, shall be allowed in his Accounts as so much Money paid to his Majesty.

AND

* See also the Ordinance of 1746.

AND any *one or more* Justices of the Peace in any County, City, or Liberty whatsoever, upon Information made upon Oath, that any Person or Persons are lurking, waiting or loitering within *five* Miles from the Sea-Coast, or from any navigable River, and that there is reason to suspect it is with an Intent to aid or assist in landing, running, or carrying away of any prohibited or uncustomed Goods, every such Justice may grant his Warrant to bring such Person or Persons before him; and if they shall not give a satisfactory Account of themselves, and their Callings and Employments, that they are not concerned in the carrying on any clandestine or unlawful Trade or Business, and were not at such Place, with Intent to carry on any clandestine Practices, every such Person, who shall not give such Satisfaction to such Justice, shall be sent to the House of Correction, and there whipped and kept to hard Labour, for any Time not exceeding one Month, and the Commissioners of the Customs or Excise respectively, are to pay 20s. *per* Head to the Informers, as a Reward for every such Offender so taken. *But* if any such Person so apprehended desires Time to make it appear that he is not concerned in such clandestine Practices, he shall not be punished by Whipping, but shall be committed to the common Goal till Proof is made to the Satisfaction of such Justice, or sufficient Security given as shall be approved by him, that he shall not be guilty of any of the said clandestine Offences. AND if any Person shall offer any Tea, Brandy, Arrack, Rum, or other Strong-Waters, or Spirits, not having a Permit; or if any Hawker, Pedlar, Petty Chapman, or other Trading Person, going from Town to Town, or to other Mens Houses, within the Kingdom of Great-Britain, shall offer to sale any Tea, Brandy, or other Spirits, *notwithstanding he has a Permit for the same*, the Person to whom the same shall be so offered to sale, may lawfully seize and detain such Tea, Brandy, or Spirits, and carry them to the next Warehouse for the Customs or Excise, and take the Person so offering such Goods to sale before any Justice of the Peace, to be committed to Prison, and prosecuted for the Penalties and Forfeitures incurred by his Offence; and the Person who seized such Goods, may prosecute in his own Name*.

AND after Condemnation of the Goods, and Commitment of the Person so offending, the Person so seizing shall be intitled to a *third Part* of the gross Produce of the Sale of such Goods; and the Commissioners of the Customs or Excise respectively, upon a Certificate from the Justice of such Offender's being committed to Prison, may advance to the Prosecutor, if he shall desire it, 1s. for every Pound of Tea, and 1s. for every Gallon of Brandy so seized, till the Goods can be sold; and, after the Sale of such Goods, the Money so advanced shall be replaced out of the Produce of such Sale. AND if any run or prohibited Goods shall be found carrying, or in the Custody of any Waterman, Carman, Porter, or other Person whatsoever, knowing the same to be either prohibited, or to have been clandestinely run or imported, and who being thereof lawfully convicted, upon the Oath of *one or more* creditable Witnesses, or by the Confession of the Party, before *one or more* Justices of the Peace of the County, Division, or Liberty where such Offence shall be committed, or the Offender found, he shall forfeit treble the Value of such Goods so found and seized; one Half to the Informer, and the other Half to the

Y 4

Poor

* By 12 Geo. I. all Informations brought in the Courts at Westminster, for the Recovery of any Penalty by the Laws of the Customs or Excise, must be in the Name of the Attorney General, or some Officer of the Revenue.

Poor of the Parish where the Offence shall be committed; to be levied by Distress and Sale of the Offender's Goods or Chables; and for want of such Distress, every such Offender shall be committed to the House of Correction, to be whipped, and kept to hard Labour for any Time not exceeding three Months.

IT was at the same Time likewise ordained, That all Ships or Vessels whatsoever, arriving from foreign Parts, having on board *6th* of Tea, or any foreign Brandy, Arrack, Rum, Strong-Waters, or other Spirits whatsoever, in Casks under sixty Gallons, (except only for the Use of the Seamen then on board such Ship or Vessel, and this must not exceed two Gallons * for each Seaman,) which should be found at Anchor, or hovering within the Limits of any Port within this Kingdom, or within two Leagues of the Shore, or should be discovered to have been within the Limits of any Port, and not proceeding in her Voyage, Wind and Weather permitting, unless it be in Case of unavoidable Necessity, and Distress of Weather, of which the Master or other Person, having Charge or Command of the Ship or Vessel, must give immediate Notice, and make Proof of before the Collector, or principal Officer of the Port; all such Tea, foreign Brandy, Arrack, Rum, Strong-Waters, and Spirits, together with the Chests, Boxes, Casks, and other Package whatsoever, or the Value thereof, shall be forfeited, whether Bulk shall have been broken or not; and the Goods and Package must be seized and prosecuted, or the Value thereof be sued for, by any Officer of the Customs or Excise, in such Manner as is hereafter directed. AND if any foreign Goods, after the 29th of September 1736, shall, by any Ship, Boat, or Vessel whatsoever, be taken in at Sea, or put out of any Ship or Vessel whatsoever, within four Leagues of any Part of the British Coasts without Payment of Customs, and other Duties payable for the same, (unless it be in Case of apparent Necessity) or some other lawful Reason, of which the Master, or other Person, having the Charge of such Ship, Vessel, or Boat, taking in the same, shall give immediate Notice, and make Proof before the chief Officer of the Customs of the first Port where he shall arrive in this Kingdom, all such Goods are forfeited, and the Master, or other Person, having Charge of such Ship, Vessel or Boat, so unshipping, or receiving the same, forfeits treble the Value thereof: And all the Vessels into which the said Goods shall be unshipped, are forfeited and lost, if the Burden of such Ship, Boat, or Vessel, exceed not 100 Tuns †; and the Master, or other Person, taking Charge of such Ship or Vessel, out of which such Goods are taken, as aforesaid, forfeits treble the Value of the Goods so unshipped. IT was also further ordained, That if any Person whatsoever should offer to bribe, recompense, or reward any Officer of the Excise or Customs to connive at, or permit any Goods to be run on shore; or to connive at any false or short Entry, or to do any other Act whereby the Crown may be defrauded in its Revenues, such Offender, whether the Offer be accepted or not, shall forfeit 50*l*. for every

* See Page 215 and 216.

† And for preventing Disputes concerning the Measurement of such Ships, the following Rule is enjoined by Law: that is to say,

Take the Length of the Keel within Board, (so much as the treads on the Ground) and the Breadth within Board by the Midship-Beam, from Plank to Plank, and half the Breadth for the Depth; then multiply the Length by the Breadth, and that Product by the Depth, and divide the Whole by 94; the Quotient will give the true Content of the Tonnage.

Offence *; one Half of which shall be to the Use of the Crown, the other Half to the Use of the Person or Persons who shall inform, prosecute, or sue for the same; except it be in such Cases where any other Distribution of the said Penalties is otherwise appointed; and all the said Penalties and Forfeitures are to be prosecuted and sued for in the Court at *Westminster*, or in the Court of *Exchequer* in *Edinburgh* respectively, except where it is directed otherwise. AND, for the more impartial Trial of any Indictment or Information, for assaulting any Officer of the Customs or Excise, it was then ordained, that all such Offences may be tried in any County of *England*, in such Manner and Form, as if the Offence had been there committed.

AND since it has been experienced, that in Ships from foreign Parts, Goods are frequently concealed in false Bulk-heads, between the Linings and false Knees, or in concealed Lockers, or in the Ballast, or false Package and other private Places, which the Officers cannot easily discover; and this is done in order to run the Duty; and there being no Law then in Force, that subjects such Goods to Forfeiture, unless they are found concealed by the proper Officer, after clearing the Ship; to prevent such Practices for the future, it was ordained, That all Goods which should be found concealed in any Place on board any Ship, or Vessel, at any Time after the Master's Report at the Custom-house, shall be forfeited, and may be seized; and if it can be made appear, that the Master, or other Person, having the Charge or Command of such Ship, or Vessel, was any Ways consenting, or privy to such Concealment, such Master, or other Person, shall forfeit Treble the Value of the Goods so found, to be recovered as before directed. And every Person or Persons whatsoever, forcibly obstructing, beating, wounding, or opposing any Officer of the Customs or Excise, on board any Ship, Boat, or Vessel, in the Discharge of his Duty, either in the Day or Night; and all such who shall act in their Aid and Assistance, being convicted thereof, shall be transported as other Felons, for any Term not exceeding seven Years; And if the Offender returns into *Great-Britain* or *Ireland* before the Time for which he was transported shall be expired, he shall suffer Death. AND it is now lawful for any Officer of the Customs or Excise, producing his Warrant, or Deputation, (if required) to go on board and enter into any Coasting Ship or Vessel, within the Limits of any of the Ports of this Kingdom, and to rummage and search the Cabin, and all other Parts, for Goods which are uncustomed and prohibited; and they are impowered to remain on board all such Ships and Vessels, during their Stay within the Limits of the Port: And if any Person does obstruct, molest, or hinder any Officer in going or continuing on board any Coasting Ship or Vessel, or in searching the Cabin, or any other Part thereof, every such Person forfeits 100*l.* for every such Offence, to be recovered and distributed as is before directed.

AND if any Person keeping any Tavern, Ale-house, Victualling-house, or any other House, where any Ale, Wine, Brandy, or other strong Liquors, is sold by Retail, shall knowingly receive, harbour, or entertain any Person against whom any Process of Arrest hath issued, for having beat, abused, or obstructed any Officer of the Customs or Excise in the Execution of his Office, or for any other Offence whatsoever committed against any Law then in being, for preventing Frauds in the Customs or Excise, or for any Crime whatsoever, that shall be committed or done in Prejudice of the said Revenue, and to which Process the Sheriff, or other Officer having Execution thereof,

* See Page 332.

thereof, shall have returned that such Person is not to be found; or who shall knowingly harbour, receive, or entertain any Person, who has been in Prison for any of the said Offences, and shall have made his Escape; or having been convicted for the same, shall fly from Justice, shall forfeit 100*l.* to be recovered, and divided as is before directed; and he shall be rendered incapable of having a Licence, or of keeping any Tavern, Ale-house, or Victualling-house, or selling Wine, Ale, Brandy, or other Strong Liqueurs by Retail for the Time to come. But then no Person can be liable to any Penalty for harbouring, &c. any Person as aforesaid, unless there has been six Days Notice given in two successive Gazettes, that the Person so harboured has absconded; and also, by a Writing to be fixed to the Door of the Parish-Church, where such Person last dwelt before his Absconding. AND to prevent the Offender's having any Correspondence with the Bailiffs, and other Officers, who have the Execution of any Writ of Process against them, it was ordained, That every Sheriff, Mayor, Bailiff, or other Person, and their Deputies, having the Execution of Process in any County, City, or Liberty, against any Person prosecuted for any Offence contrary to any of the Laws then in being, relating to the Customs or Excise, were respectively enjoined, upon Request of a known Solicitor for the Customs or Excise, to grant special Warrants to such Persons as such Solicitor for the Customs or Excise should desire, in writing upon the Back of the Process for apprehending such Offender; and in Default thereof, such Sheriff, Mayor, &c. or the Person acting in the Office respectively, should be liable to a Process of Contempt, as if he had neglected or refused to have executed the like Process in the common Method of Proceeding: And it was ordained, That all Sheriffs, Mayors, &c. as aforesaid, so making out such especial Warrant, should be saved harmless from all Escapes, and from all Actions and Proceedings by reason thereof; and also, which should happen from the Time of taking such Offender, till he should be committed to the proper Gaol or Prison, or tendered to the Person having Charge thereof, who is enjoined to receive every such Offender, and to give a Receipt for his Body. AND that for the future, that there may not be any Failure of Justice, for want of the Officer's proving the exact Form of Words made Use of at making of any Seizure, it was ordained, That all Judges and Justices of the Peace, in all Trials of any Seizures whatsoever, should proceed to the Merits of the Cause, without inquiring into the exact Form or Manner of making such Seizures*. AND whereas desperate and evil-minded Persons have frequently, with an armed Force, and in a public and avowed Manner, passed and repassed through several Counties with large Quantities of Tea, Brandy, and other prohibited and uncustomed Goods, and deterred the Officers of the Customs and Excise from doing their Duty; or have beat, wounded, maimed, or murdered them in the Discharge thereof: In order to put a Stop to such Practices, it was ordained, That if any Person passing with prohibited or uncustomed Goods, or armed with Guns, Pistols, or other offensive Weapons, should violently resist any Officer of the Customs or Excise, or their Assistants, in the Execution of their Duty, it should be lawful for the Officers of the Customs or Excise, and their Assistants, to oppose Force to Force; and if such Officers, or any one acting in their Assistance should wound, maim, or kill any Person so resisting them in the Execution of their Duty, the Officers, and their Assistants, may plead the general

* See Page 236, Part II.

neral Issue, and give the special Matter in Evidence in his or their Defence; and if they are brought before any Justice of the Peace, on Account of such killing, wounding, or maiming, the Justice is enjoined and required to admit every such Person and his Assistants to Bail. AND it was further ordained, That if any Person should be prosecuted for having done any thing in relation to the Premises, he might plead the general Issue, and give the special Matter in Evidence, and he should recover treble Costs; and in case of a Verdict should have the like Remedy for the same, as Defendants have in other Cases.

ABOUT nine Years after, *Anno 1745*, the Legislature finding that notwithstanding the several Ordinances already made to prevent the unlawful Importing and clandestine Landing and Running of Goods, divers wicked and evil-disposed Persons did still continue **1745.** to carry on such illegal Practices, to the great Diminution of the public Revenue, and to the manifest Prejudice of the fair Traders, and had likewise seduced great Numbers of other Persons to join with them in the said wicked Practices, yet nevertheless, as there might be some Hope that many of the said Persons who have been unwarily seduced, might be reclaimed by Grace and Clemency from offending in the like Manner for the future: Therefore, for the Quiet and Ease of his Majesty's Subjects who might have been guilty of such Offences, and that such of them as are not yet become incorrigible, being freed from their Fears and Apprehensions, might be induced to leave off their illegal Practices, and to return to their lawful Callings and Occupations; and that such Persons as should, after such an Act of Indulgence and so public a Warning, presume to commit any of the said Offences, might be left without Excuse, and be brought to Justice, and duly punished as their Crimes should deserve. It was ordained, that all Persons who before the *first Day of May 1745*, had incurred any Penalty or Forfeiture by the clandestine running, landing, unshipping, concealing or receiving any prohibited Goods, Wares, or Merchandizes, or any foreign Goods, liable to the Payment of the Duties of Customs and Excise, or either of them, and who were or might be subject to any Information, or other Prosecution whatsoever, for the Penalties for the running, landing, unshipping, concealing, or receiving thereof, or for landing of any Goods without the Presence of an Officer, should be acquitted, indemnified, released, and discharged, against the King's Majesty, his Heirs, and Successors, and against all and every other Person and Persons, from all Penalties, Forfeitures, Indictments, Outlawries, Convictions, and Judgments incurred, had or given, or that might arise or accrue for, or by reason or means of any the said Offences, or other Matters or Things herein before-mentioned and expressed. AND it was ordained, that any Person might plead this Ordinance for their Discharge without any other Fee than only *16d.* for entering the Plea. But then all Suits against Officers of the Customs, Excise, &c. are to be discharged, before any Person or Persons should claim Benefit by this Ordinance; and that any one's claiming the Benefit of this Ordinance should be deemed a Discharge or Release to such Officers from all such Suits with Costs. BUT it is provided, that all Persons that should offend after they have taken the Benefit of this Ordinance, and should afterwards be guilty, or commit any of the like Offences, Trespasses, Frauds, or Misdemeanors as before mentioned, or hereby intended to be acquitted, released,

leased, or discharged, or any of the Offences hereafter in this Ordinance mentioned or expressed, should be subject and liable to be prosecuted, not only for, or in respect of such new Offence by him, her, or them committed, but should also for, and in respect of the said Offences committed before the making this Ordinance; and for all Bonds and Securities by them, or by any of them given for his Majesty's Use, commonly called Smuggling Bonds, be subject and liable to all and every the same Pains, Penalties, Forfeitures and Actions, for Duties of Customs or Excise, and Actions upon the said Bonds and Securities, as he, she, or they would have incurred, or been subject or liable to, in case this Ordinance had never been made. BUT it was provided, that nothing in this Ordinance contained should extend to acquit, release or discharge any Judgment or Judgments, where the Monies or other Things recovered have been actually levied, or the Parties taken in Execution upon such Judgments before the first Day of May 1745; nor should it extend to acquit, release, or discharge any Judgment in respect to such Part thereof as belongs to the Informer, until such Person or Persons, who would take the Benefit of this Ordinance, should pay to such Informer the full Costs of Suit. AND it was further ordained, that if any Person had been guilty of any of the Offences herein before mentioned, for which any such Persons are by any Law now in being liable to be transported as a Felon, should for any of the said Offences take or receive the Benefit of this present Ordinance, and should afterwards commit any of the said Offences, for which he is now liable to be transported as aforesaid, that then such Person should be adjudged guilty of Felony, and should suffer Death as in Cases of Felony, without Benefit of the Clergy. AND it was provided that all Persons, who had before the first of May 1745, agreed to any Sum of Money by way of Composition to his Majesty, or in respect of any of the above-mentioned Offences, should make good such Composition and Agreements as they have made; or else should be excluded all Benefit and Advantage from this Ordinance.

THE Legislature, finding the Laws against Smuggling still ineffectual, ordained, that if any Persons to the Number of three, or more, armed with Fire Arms or other offensive Weapons, should from 1746. and after the 24th Day of July, in the Year of our Lord 1746, be assembled, in order to be aiding and assisting in the illegal Exportation of Wool or other Goods prohibited to be exported, or the carrying of Wool, or other such Goods, in order to such Exportation, or in the running, landing, or carrying away prohibited or uncustomed Goods, or Goods liable to pay any Duties, which have not been paid or secured, or in the illegal relanding of any Goods whatsoever which have been shipped or exported upon Debenture or Certificate; or in rescuing or taking away the same after Seizure, from any Officer or Officers of the Customs or Excise, or other his Majesty's Revenue, or other Person or Persons employed by him or them, or assisting him or them, or from the Place where they should be lodged by him or them; or in rescuing any Person who should be apprehended for any of the Offences made Felony by this or any other Ordinance, relating to the Revenues of Customs or Excise; or in preventing the apprehending any Person, who should be guilty of any such Offence; or in case any Persons to the Number of three or more, so armed as aforesaid, should after the said 24th Day of July, be so aiding or assisting, or if any Person should, from and after

after the said 24th Day of July 1746, have his Face blacked, or wear any Vizard, Mask, or other Disguise, when passing with such Goods, or should forcibly hinder, obstruct, assault, oppose, or resist any of the Officers of the Customs or Excise, or other his Majesty's Revenue, in the seizing or securing any such Goods; or if any Person or Persons, from and after the said 24th Day of July, in the Year aforesaid, should maim, or dangerously wound any Officer of the Customs or Excise, or any other his Majesty's Revenue in his attempting to go on board any Ship or Vessel, within the Limits of any of the Ports of this Kingdom, or shoot at, maim or dangerously wound him, when on board such Ship or Vessel, and in the due Execution of his Office or Duty, then every Person so offending, being thereof lawfully convicted, should be adjudged guilty of Felony, and should suffer Death as in Cases of Felony, without Benefit of the Clergy. AND that all and every Person and Persons who should at any Time be convicted of any of the Offences afore-mentioned, within that Part of *Great-Britain* called *Scotland*, should for every such Offence, incur and suffer the Pains of Death and Confiscation of Moveables. AND for the more speedy bringing of such to Justice, it was ordained, That if any Person or Persons should be charged with being guilty of any of the Offences aforesaid, before any one or more Justices of the Peace, or before one of the Justices of the Court of *King's-Bench*, if the Offence be committed in *England*; or before the Lord Justice-General, or one of the Lords of Justiciary, or one or more Justices of the Peace in *Scotland*, if the Offence be committed in *Scotland*; by the Information of one or more credible Person or Persons, upon Oath, by him or them to be subscribed, such Justice of the Peace, or Justice of the *King's-Bench*, or Lord Justice General, Lord Justice Clerk, or Lord of Justiciary respectively, before whom such Information should be made as aforesaid, should forthwith certify under his Hand and Seal, and return such Information to one of the principal Secretaries of State, who is to lay the same before the King in Council, and an Order to be then made for the Offender's Surrendering in 40 Days, and to be committed to Gaol without Bail or Mainprize; which Order* is to be published in two successive Gazettes, and transmitted to the Sheriff, who must proclaim the same in two Market-Towns, near to the Place where the Offence should be committed, and affix a Copy on some public Place in such Market-Towns: And, in case such Offender do not surrender himself pursuant to such Order of the King in Council, such Offender so neglecting or refusing to surrender, as aforesaid, or escaping after such Surrender, should, from the Day appointed for his Surrender as aforesaid, be adjudged to be convicted of Felony, and should suffer Pains of Death, as in Cases of a Person convicted and attainted by Verdict and Judgment of Felony, without Benefit of the Clergy. And the Court of *King's-Bench*, or Justices of *Oyer and Terminer*, is to award Execution against such Offenders. AND it was farther ordained, That all Persons who should harbour, receive, conceal, aid, abet, or succour such Offenders, after the Time appointed for their Surrender, should be transported as Felons for seven Years; and if they return before Expiration of the said Term, they should suffer Death as Felons, without Benefit of the Clergy. AND it was also ordained, That if any Officer of the Revenue, or other Persons, being employed in the seizing, conveying, or securing any *Wool*, or other Goods forfeited, on Account of their being prohibited or uncustomed Goods, or on Account of the Duties chargeable thereon

* See the Form on Page 347.

thereon not having been paid or secured, or by Virtue of any Law made to prevent the Exportation of *Wool*, or other Goods, or in endeavouring to apprehend any Offender against this Ordinance, should be beat, wounded, maimed, or killed by any Offender against this Ordinance; or the said *Wool*, or other Goods, so seized; should be rescued by Persons armed as aforesaid; in all such Cases, the Inhabitants of every Rape, Lath, or Hundred, where such Fact should be committed; are to make good the Damages, and to pay to the Executor or Administrator of each Person killed 100*l*. For each Person beat, wounded, or maimed, 40*l*. For Loss of Goods, 200*l*. which is to be rateably and proportionably taxed upon the Rape, Lath, or Hundred, hereby made liable to Damages as in Cases of Robberies. BUT it is provided, that no Person should recover any Damages for such Beating, Wounding, Maiming, or Loss of Goods, unless he should, within four Days after such Injury, cause Notice to be given of such Offence being committed, unto two or more of the Inhabitants of some Town, Village, or Hamlet, near to the Place where such Fact was committed, and should, within eight Days after such Fact, declare upon Oath, before some Justice of the Peace, of the County, Liberty, or Division, where the same was committed; which Examination every such Justice is obliged to take; whether the Person so examined did know the Person or Persons, who committed such Fact, or any of them; and if upon such Examination it be declared, that he or they knew the Person or Persons, or any of them, then he is to be bound by Recognizance to prosecute such Offender or Offenders, according to Law; and no such Person is to recover any Damages, unless he, over and besides the said Notice and Recognizance herein before required, give such Notice; and enter into such Recognizance, as Persons robbed are directed to give and enter into, in order to enable them to maintain Actions upon the Act of the eighth Year of the Reign of his late Majesty. But if the Offender should be apprehended and convicted of such Offence, within the Space of six Calendar Months after the Offence committed, no Hundred, Rape, or Lath should be in any wise subject to make any Satisfaction for such Damages, or to pay the said 100*l*. to the Executors or Administrators of such Person killed as aforesaid. AND all Actions against any Hundred, Rape, or Lath, must be brought within twelve Months after the Offence committed. AND for the more effectual discovering and apprehending such Offenders in that Part of *Great-Britain* called *England*, who have been advertised in the Gazette as aforesaid, and have not surrendered within forty Days, it was ordained, That from and after the 24th Day of July 1746, every Person and Persons, who should apprehend and take, or discover so that he may be taken, any Person so advertised as aforesaid, who shall not have surrendered himself within forty Days, and cause him to be brought before one of the Justices of the Court of *King's-Bench*, or any Justice of the Peace for *London* or *Middlesex*, (who is hereby required to commit such Person to the Prison of *Newgate* for such Felony) should have and receive, for every such Person, who should be so apprehended, the Sum of *Five-hundred Pounds*, to be paid within one Month after Execution should be awarded against such Offender, by the Commissioners of the Customs or Excise respectively, who are required to receive the Applications of all who are concerned in discovering or apprehending such Offender; and determine who are intitled to the said Reward, and their respective Shares and Proportions thereof; and the same is to be divided amongst such Persons,

Persons, in such Shares and Proportions, as to the Commissioners of the Customs or Excise respectively, or to the major Part of them, should seem reasonable. AND if any such Offender, against whom no such Order of Council had been made, should himself so discover or apprehend any other Offender, against whom such Order shall have been made, he is to be discharged and acquitted of such his own Offence, and all other the like Offences then before committed, and for which no Prosecution had been then commenced, and should also have his Share of the Reward. AND if any Person should lose a Limb or an Eye, or be otherwise grievously maimed or wounded in the apprehending, or endeavouring to apprehend, or making Pursuit after such Offenders, every Person so wounded and maimed as aforesaid, upon Application to the Commissioners of the Customs or Excise respectively as aforesaid, shall have and receive the Sum of Fifty Pounds, over and above any other Reward that he may be entitled to, as an Apprehender, by Virtue of this Ordinance. AND in case any Person should be killed in the taking or apprehending, or endeavouring to apprehend, or in making Pursuit after any such Offenders, that then the Executors or Administrators of such Person so killed as aforesaid, upon Application to the Commissioners of the Customs or Excise respectively, as aforesaid, and laying sufficient Proof before them, of such Person being killed, as aforesaid, is to have and receive the Sum of 100*l*. all which Rewards before-mentioned are to be paid to the several and respective Persons, who should become entitled thereto as aforesaid, by the Receiver General of the Customs, or Cashier of the Excise respectively, upon an Order directed to them, for that Purpose, by the Commissioners of the Customs or Excise. AND it was further ordained, that if any Offender, in that Part of Great-Britain called England, at any Time before the King's Order in Council be made, requiring him to surrender within the Space of forty Days, should discover two or more of his Accomplices to the Commissioners of the Customs or Excise in England, respectively, and apprehend them, or cause them to be apprehended, so as they, or two of them at least, be brought to Justice, and convicted of such Offence, the Offender or Offenders so discovering should have and receive the Sum of Fifty Pounds for every such Offender so discovered and convicted, as a Reward for such Discovery; and that every such Person so discovering should be clearly acquitted and discharged of such their Offence, and all other the like Offences then before committed, for which no Prosecution should have been then commenced: Which said Reward is to be paid in such Manner as before is mentioned, with respect to the Reward for apprehending. AND in Consideration that the Ordinances for securing the Revenues of Customs and Excise are enforced for the future by these new Penalties and Provisions, which ought most rigorously and strictly to be put in Execution; It was ordained, that any Offences herein described, committed before the 24th of June 1746, should be pardoned, if the Offender do, before he shall be apprehended for the same, and before the 29th Day of September 1746, enter himself with some Commission Officer of his Majesty's Fleet, to serve as a common Sailor in the said Fleet, and do, for one Year at least, from the Time of such Entry, actually serve and do Duty as such in the said Fleet, and shall also, before the said 29th of September, register his Name, Employment, and usual Place of Abode, with the Clerk of the Peace of the County, Riding, or Division where he resides: BUT it is provided, that every Person who should make such

such Entry with the Clerk of the Peace, and claim the Benefit of this present Ordinance as aforesaid, and should afterwards commit any of the like Offences as those before-mentioned, or hereby intended to be acquitted, released, or discharged, or shall at any Time after desert from the said Service, or within the said Year procure his Discharge therefrom, shall be liable to be prosecuted; not only for, or in respect of such new Offence, but should also be subject and liable to all the same Pains, Penalties, and Forfeitures, as he would have incurred, or been subject or liable to, in case this Indemnity had never been given. AND that if any Officer of the Navy should, by false Muster or Certificate, or by any other collusive or evasive Ways or Means whatsoever, permit such Person to avoid the actual Service, as aforesaid, such Person should not only lose the Benefit of this Indemnity, but every such Officer should suffer the Penalty of 500*l*. And it was further ordained, that in case any Information should be commenced and brought to Trial, on account of the Seizure of any Ships as forfeited for illegally carrying Goods, or of any Wool, Goods, Wares, or Merchandizes, as prohibited or uncustomed, or illegally carried or exported, or intended or attempted to be exported, or as illegally relanded, after having been shipped or exported upon Debenture or Certificate, wherein a Verdict should be found for the Claimer thereof, and it should appear to the Judge or Court, before whom the same should be tried, that there was a *probable* Cause of Seizure, that then such Judge or Court should certify on the Record, that there was a probable Cause for the Prosecutor's seizing the said Ship or Goods; and in such Case that the Defendant should not be entitled to any Costs of Suit whatsoever, nor should the Person who seized the said Ship or Goods be liable to any Action, Indictment, or other Suit or Prosecution on Account of such Seizure; and that in case any Action, Indictment, or other Prosecution, should be commenced and brought to Trial against any Person whatsoever, on Account of the Seizure of any such Ship, or of any Wool, Goods, Wares, or Merchandizes, as prohibited or uncustomed, or as illegally carried or exported, or intended or attempted to be exported, or illegally relanded, as aforesaid, wherein a Verdict should be given against the Defendant or Defendants, if the Court or Judge, before whom such Action or Prosecution should be tried, should certify on the said Record, that there was a probable Cause for such Seizure, then the Plaintiff, besides his Ship or Goods so seized, or the Value thereof, should not be entitled to above *two Pence* Damages, nor to any Costs of Suit; nor should the Defendant in such Prosecution be fined above *one Shilling*. But it is to be observed, That this Ordinance (commencing the 24th Day of June 1746,) was to continue in Force only for the Space of *seven Years*, and from thence to the End of the next 1753. Session of Parliament. AND, by an Ordinance of the 26th of George II. is continued in Force until the 24th of June 1758, and from thence to the End of the next Session of Parliament.

*The Form of a Proclamation in the Gazette, mentioned on
Page 344.*

AT the Court at *Kensington*, the 3d Day of June 1747. Present, the King's most Excellent Majesty in his Privy-Council.

W Hereas *Jacob Pring*, otherwise *Prim of Harvehurst*, in the County of *Kent*, Labourer, was, upon the Sixth Day of *May* last, charged by Information

Information of a credible Person upon Oath, by him subscribed before *Thomas Burdus*, Esq; one of his Majesty's Justices of the Peace for the County of *Middlesex*, with having been guilty upon the second Day of *April* last, of being, with divers other Persons, armed with Fire-Arms, or other offensive Weapons, and so armed, being assembled at *Ghifflet* near *Reculver*, in the County of *Kent*, in order to be aiding and assisting in the Running, Landing, and carrying away, uncustomed Goods:—Which Information was afterwards certified by the said *Thomas Burdus*, under his Hand and Seal, to one of his Majesty's Principal Secretaries of State, who has laid the same before his Majesty in his Privy-Council, pursuant to the late Act of Parliament of the Nineteenth Year of the Reign of his late Majesty, in that Case made, and provided:—His Majesty doth, by and with the Advice of his Privy-Council, by this his Order in his Privy-Council, require and command, that the said *Jacob Prim*, otherwise *Prim*, do surrender himself within the Space of forty Days after the first Publication of this Order in the *London Gazette*, to the Lord Chief Justice, or one other of his Majesty's Justices of the Court of King's Bench, or to one of his Majesty's Justices of the Peace.

William Sharpe.

The Attorney and Solicitor General's Opinion concerning the Apprehending of Smugglers.

AT the Court at *Kensington*, the third Day of *June* 1747. Present, the King's Most Excellent Majesty in his Privy-Council.

WHereas there was this Day read, at the Board, a Report made by his Majesty's Attorney and Solicitor-General, to the Lords Commissioners of his Majesty's Treasury, upon considering a Representation from the Commissioners of the Excise, together with several Papers thereto annexed, relating to the audacious Behaviour of the Smugglers in the Counties of *Kent* and *Sussex*, who assemble in great Bodies, and go armed to assist in the Smuggling and Receiving of Run Goods; and not only menace the Magistrates, but resist the Officers of the Revenues in the Discharge of their Duty. Which Report is as follows, *viz.*

To the Right Honourable the Lords Commissioners of his Majesty's Treasury.

May it please your Lordships,

IN Obedience to your Lordships Commands, signified to us by Mr. *Wall*, in his Letter of the 23d Instant, transmitting a Representation of the Commissioners of the Excise, of the audacious Behaviour of the Smugglers in the Counties of *Kent* and *Sussex*, and of their Menaces to the Justices of the Peace, the Officers of the Revenues, and all others who shall dare to obstruct their outrageous Proceedings: By which Letter we are directed to take the said Representation, and the Papers annexed, into Consideration (which are all herewith returned) and report to your Lordships what Powers there are at present for any of his Majesty's Officers, either Civil or Military, to resist and subdue those Offenders, and to prevent the like for the future by Force, as all other Means have hitherto proved ineffectual to that End.

We have taken the same into Consideration, and are of Opinion, that

Part III.

Z

Wall

“ all his Majesty’s Subjects, both Civil and Military, Magistrates, Officers and private Persons, have, without any express Warrant for that Purpose, Authority to seize and apprehend any Persons assembled, armed, and acting, or who have assembled, armed, and acted in such Manner as described in the aforementioned Representation and Papers, and bring them before a Magistrate, who may commit them to Prison, and, in the seizing, apprehending, securing, and committing them to Prison, may repel Force with Force, and justify any Violence or Hostilities which may be necessary to suppress and subdue them, or bring them to Justice.

“ The Powers abovementioned are vested in all his Majesty’s Subjects generally for the Preservation of the Peace: But the Justices of the Peace, and Peace-Officers are, both by the Nature of their Office, and the express Direction of several Acts of Parliament, bound to suppress all Riots, unlawful Assemblies, and Breaches of the Peace, of which the Offences complained of are notorious Instances. And the Neglect of it is a high Misdemeanour, for which they are accountable in a criminal Prosecution.

“ The Law has likewise for this Purpose furnished them with Strength and Force, as well as Authority, by empowering and commanding them to use the whole Power of the County, that is, to call all or any of his Majesty’s Subjects, except Clergy, fit to bear Arms, to assist them, and, as Part of those Subjects, they may command, and take the Assistance of any Military Force in those Parts, who, and all others, will be fully justified in any Acts of Violence they shall do against the Offenders.

“ As to the preventing the like Offences for the future, the Law has already made them very penal, especially by an Act of the last Sessions, by which the assembling and going armed, to the Number of three, to assist in any Sort of Smuggling, or receiving or protecting run Good, or in rescuing Prisoners guilty of Felony, by the Laws relating to the Customs or Excise, and the resisting the Officers of those Revenues, by the like Number of armed Persons, are made Felony, without Benefit of the Clergy; and in which Act particular Provisions are made by great Rewards and otherwise, for the apprehending and bringing such Offenders to Justice. And we don’t know what further can be done, than by keeping a sufficient Force in those Parts, and giving strict Orders to all Officers, both Civil and Military, to use that Force in support of the Laws, and suppressing, subduing, and bringing to Justice all such Offenders, and by seeing that such Orders be obeyed.

“ All which is submitted to your Lordships Consideration.”

D. Ryder,
W. Murray.

His Majesty, upon Consideration thereof, is hereby pleased to order with the Advice of his Privy-Council, that a Copy of the said Report be printed and published in the next *London Gazette*, to the End that all his Majesty’s Subjects may be informed of the Powers vested in them by Law, for the seizing, apprehending, securing and committing to Prison, all Persons whatsoever, who have acted, or shall hereafter act in the Manner beforementioned. —And his Majesty doth hereby require and command all Officers, both Civil and Military, to use their utmost Force in the Support of the Laws, and suppressing, subduing, and bringing all such Offenders to Justice.

William Sharpe.

C H A P.

C H A P. X.

Concerning the Business and Duty of those Officers of the Excise, who survey Tanners, Tawers, Oil-Dressers, and Parchment-Makers; so far as to prevent their evading the Duty, or defrauding the Revenue.

THE Officer after he has qualified himself as directed in *Page 215*, if he has a *Foot-Walk*, he must survey every Tanner, Tawer, Oil-Dresser, and Parchment-Maker, at least *once a Day*, and *oftener*, if it is apprehended needful; and this he must do at *uncertain Times*, as a Means to discover any unfair Practices. But, if he has a *Ride*, then he must consult with the *Supervisor* what Place will be most proper for him to reside at, so as to make the best of those Branches of the Revenue as are under his Care and Inspection; and whatever Place it is which he resides at, he must survey *that*, in all Respects, as a *Foot-Walk*, and his *Ride* as often, and in such Manner, as is directed in *Page 242*.

The Officer must observe that all *Tanners, Oil-dressers, Tanners, &c.* must give two Days Notice in Writing, of the *Day and Hour of the Day*, before they take any Hides, Skins, &c. out of the *Woole*, &c. in order to be dried, unless it be in *Foot-Walks*, or those Yards which are surveyed *every Day*; here *one Day's Notice* for *taking out*, or for *marking*, will be allowed of as sufficient. And these *Notices* the Officer must put on a *File* at the *Excise-Office*, kept for that Purpose; and the *Traders* must likewise make Entries of their Goods within *two Days* after they are taken out; for which Purpose, the Officer must leave a new *Entry Paper* at each Trader's House, and the old ones must be carried to the *Office*, that at the Sitting the *Supervisor* or *Collector* may compare them with the Book, and *swear* the *Traders*, or such *proper Servants* as they shall appoint: And all these Entries the Officer must put upon *another File*, and put a blank Paper between each Round. But if any *Tanner, Tawer, &c.* does not take out Goods in order to dry, at or near the Time expressed in the Notice given, then such *Tanner, Tawer, &c.* is obliged to give a fresh Notice, after the same Manner, as if no former Notice had been given by him. If the Officer, when he is upon his Survey, finds that any *Calf-Skins, Hides, Butts, or Backs*, are *newly* taken out, he must be sure to take an Account of them by *Tale*, and compare the same with the respective Person's Entry. The Officer must also, as often as possible, take such *other Goods* by *Tale* as are *newly* taken out, and not, to excuse his Neglect, make a Pretence of his being otherwise employed, unless he really were so. And, in that Case, he must immediately write over the same *not examined*. And as a

How the Officer must be qualified. Of surveying Foot-walks.

Of surveying Rides.

All Tanners, &c. to give two Days Notice.

Except in Foot-walks.

These Notices to be filed.

Traders to make Entries.

When Traders are to give fresh Notice.

Account to be taken by Tale of Hides, &c. and compared with the Entry.

How to prevent Frauds.

To be weighed as soon after Notice as possible.

Officer must prove the Scales, and mark each Draught out of the Scales.

How the different Sorts of Leather are to be stamped.

Must observe the Stamps.

Of Scotland and the Custom-house Marks.

When Leather has been stamped wet, and of the No. of such Mark.

What Care the Officer ought to take of his Stamp.

Means to check and prevent the Trader's carrying away any *Hides, Skins, Backs, or Butts*, &c. which were dried, or were drying, before they are marked and charged; and putting others in their Place, which have been privately taken out, he must frequently count the Number of such Kinds of *Hides, Skins*, &c. and observe the Condition of them; and if he perceives that any are missing, or some of the same taken out which were almost dried, and others wet, he may then justly suspect a Fraud. And in such Cases he must use his Endeavours to detect them, that Information may be laid for removing them before marked,

or for taking out without giving Notice thereof. The Officer must weigh and mark the Goods as soon as possible, after the Notice is shewn in the Journal, and he should frequently try and examine the Weights and Scales, one against another, and see that they are just, before he offers to proceed to weigh; and he must mark each Draught out of the Scales, and not weigh two or more Draughts before he begins to mark them.

The Method of marking or stamping is as follows, which the Officer must be careful to observe, viz. *Hides, Butts*, and *Backs*, must be marked on each *Buttock*; except *Horse-Hides*, with the *Hair on*, and these must be marked on the *Flank*; tanned *Calf-Skins, Hog-Skins*, and *Dog-Skins*, must be marked above the *Tail*, and other *Skins* in the *Neck*; and the Officer must note, that no Leather is ever to be marked on the *Flesh-side*, that the Mark may be as plain and visible as possible, after the *Skins and Hides* are *pared, curried*, &c. As often as he has an Opportunity, the Officer must observe the Marks upon Leather, whether they are struck with a true or false Stamp, in which he will be assisted by these Remarks, viz. That the Stamps which are used in Scotland or North-Britain, are distinguished from those used in England, by having the Letters *N. B.* and the Stamps which are used at the Custom-house are distinguished from either of the other, by having the Letter *I*, which signifies *Import*.

The Officer must also take Notice, that, when Leather has been stamped while it was wet, the Mark will always be shrunk, and not appear so large and fair as it does upon Leather that has been marked when it was dry; and when he finds any Leather that has been so marked, he has cause to suspect that the Duty has not been regularly and fairly charged; because it is contrary to the Interest of the Trader to have his Leather weighed in such a Condition. And in that Case the Supervisor, or Collector, must be made acquainted with it; as also with the Number of the Stamp, that the Commissioners may have Knowledge of it, and prevent the like Practices for the future. The Officer cannot be too careful of the Stamp wherewith he is intrusted, because if he loses it, he will be discharged; and, to prevent any fraudulent Use being made of the Stamp, it is highly requisite that, when he has not Occasion to carry it with him, he keeps it safely locked up, and intrust no Person with the keeping of the Key but himself. There having been repeated

repeated Instances of Tanners and others who have *impaired* or *shaved* their Skins, contrary to Act of Parliament; and likewise that have not kept their *Skins and Hides*, which have not been *duly marked, a-part and separate* from their Skins and Hides that have been *duly marked*; or that have not for the Space of *twenty-four Hours in FOOT-WALKS*, or of *Forty-eight Hours* in *RIDES*, next after such Goods are marked, kept them separate from those Goods which were of a *former Marking*, except they have been sooner re-weighed, or an Account taken of them by the *Supervisor*; in these, or the like Cases, the Officer must give the *Collector or Supervisor* Notice, that they may prosecute such Offenders according to Law. The Officer must *swear* Tanners, Tawers, and Oil-Dressers, to the Value of their Goods, which are charged *ad Valorem*, at the same Time that he makes such Charges in his Book; and, after he has signed those *Affidavits*, he must be careful to put them upon the *Notice File*. It is easy to produce many Instances, in which the Revenue has greatly suffered by running *wet Goods* from the Tanners to the Curriers, and also by *privately washing* Skins at the *Oil-Mills*; the Officer must therefore, to prevent such Practices, make *cautionary Surveys* upon those, who are suspected of such Practices, as often as he can; and if he meets with any Leather in the Currier's Possession, or if at any *Fairs or Markets* he finds any Leather *unmarked*, and cannot receive Satisfaction that the Duty of it has been charged, he must, in either of those Cases, make a Seizure of the same. Some Traders have been frequently guilty of entering oiled Deer Skins for *Sheep and Lamb*, and tanned Calf Skins for *Slinks*; the Officer therefore, that he may not be imposed upon, must be careful and industrious in applying himself to get a true Knowledge of the several *Kinds* of Leather; so that he may be able to distinguish one Sort from another; and he must *observe*, that in all *Lamb and Sheep Skins* the *Gash* of the Knife will appear in the Shanks, but in *Buck and Doe Skins* the Shanks are smooth, by Reason they are *cased* and not *slayed*, as *Lamb and Sheep* are: And, if he finds the *Shanks* cut off, he has Reason to suspect a Fraud. And, where the Officer is *doubtful*, he must always make the *best Charge*, and leave the Trader to discharge himself as he can. Note, That Vellum and Parchment in the Custody of *Distributors* of the *Stamp-Office*, and their *Sub-distributors*, not marked with the *Leather-Stamp*, the Officer is to let pass, as having paid the Duty of Vellum and Parchment; provided the same appears to have the *Price Mark* of the Stamp-Office thereon. There is an easy Method (which is *approved of by the Commissioners*) for

Of lessening the Weight of Hides.
Of removing and not keeping separate from those formerly marked.
Must swear Tanners, &c. to the Value of those Goods that pay Duty *ad Valorem*.
Of running wet Goods from the Tanners to the Curriers, and of washing Skins at the Oil-Mills.
The unstamped Leather, &c. to be seized.
How Officers are imposed upon.
Of the several Kinds of Leather.
The Use of observing the Shanks.
Indoubtful Cases make the best Charge.
Of stamped Vellum, and Parchment.
An expeditious Method for charging the Duty on Pieces of Hides, &c.

This Mark is made with Printing Ink, and usually placed below the Stamp, to shew the Price of the Parchment exclusive of the Stamp. Such Skins as are regularly prized at the Office, have a Crown at the Top of this Mark, which Skins prized elsewhere always want.

Examples.

for the Officer's expeditious charging the Duty on *Pieces of Horse-hides*, and *other Hides*, which are *tawed*, and *Pieces of Beaver-skins*; and the Method is this: *First*, Of *Beaver-skins*; Weigh a *middling Dozen*, which we will suppose weighs twenty Pounds, and enter 20 in his Book, on the Top of the Leaf, in the *proper Column*, and this will be a *fixed Divisor*, to find out the *Dozen and odd Skins*, which are contained in a Parcel of *Pieces of Beaver Skins*: As for *Example*; A Number of *Pieces of Beaver* weighs 895 Pounds, this being divided by 20, the Weight of a *middling Dozen*, it brings out 44 Dozen 9 Skins to be charged in the Officer's Book. *Secondly*, Let us suppose, for *Example*, the 895 Pounds to be the Weight of a Number of *Pieces of Horse-Hides tawed*, and the *Divisor* 20 Pounds to be the Weight of a *middling Horse-Hide*, then must the Officer's Charge be $44\frac{3}{4}$ of *Horse-Hides*. *Thirdly*, For *Example*, let us suppose the 895 Pounds to be the Weight of a Number of *Pieces of other Hides tawed*; if you divide it by 40, which we will suppose to be the Weight of *one other middling Hide*, then the Officer must charge $22\frac{1}{2}$ of *like Hides*, I think this is very plain; but, lest I should not be understood, I shall set down the *Working* of the *Examples* above.

1. Pieces of Beaver.	2. Pieces of Horse-Hides.	3. Pieces of other Hides.
20) 895 ($44\frac{3}{4}$	20) 895 ($44\frac{3}{4}$	40) 895 ($22\frac{1}{2}$
80	80	80
—	—	—
95	95	95
80	80	80
—	—	—
15	15	15

Equal to 44 Doz. 9 Skins. Equal to $44\frac{3}{4}$ Hides.

Of Upper-Leather called Roundings, Wombs, Rands, and Offals.

Of Sole-Leather, called Crop-Soles.

Because I believe it may be useful to many, I shall here set down a *Description* of those several Sorts of Leather that are made use of for *Upper-Leather*, or *Sole-Leather*, which do not retain the Name of the Hide or Skin from whence they are taken; but, upon their being cut into *particular Forms*, acquire *new Names*. I. Such of these as are made Use of for *UPPER-LEATHER*, are known by the several Names of *Dibblings*, *Roundings*, *Wombs*, *Rands*, and *Offals*: The *Offal* is only the *thin Part* of such Hides as the *Bands* and *Clout-Leather* are cut from, i. e. the *Belly*, *Flank*, and *Shank* of the Hide; and these are frequently cut into several *Pieces*, and tanned for *Upper Leathers*. The *Offal Part* of the Hide is most frequently met with in remote Collections, in some of which they are also known by the Name of *Roundings*, in others by the Name of *Heads*, *Dibblings* and *Wombs*. II. Of such as are made use of for *SOLE-LEATHER*, and are distinguished by the several Names of

of *Crop-Soles*, *Bends*, *Clout-Leather*, *Butts*, and *Backs*, *Crop-Soles* are cut out of the *Back* of a good stout *Uppit-Leather-Hide*, after it is tanned. 1. *BENDS* are what are cut out of *Bends* what. the best Part of the Hide, i. e. out of the *Backs*, *Ribs*, *Buttocks*, and *Shoulders*, and into more or less Pieces frequently from six to ten *Bends*, according as the Custom of the Country requires; and then they are tanned in the same Manner as *Butts* and *Backs*, which I shall describe below. 2. *CLOUT-LEATHER*, is only a smaller Sort of *Bends*; the best of the *Clout-Leather* what. Hide being cut into 20 or 30 Pieces, which is cured differently from *Bends*, *Backs*, or *Butts*, (which are immediately hung up to dry when taken out of the *Wooze*;) But *Clout-Leather*, when it is sufficiently tanned, is laid in a Hole, covered with *Horse-Dung*, which gives the Leather, when it becomes dry, an extraordinary *Hardness*, and a black Colour: This Sort of Leather is very common in the *West* of England, viz. at *Exeter*, &c. 3. *BUTTS* most commonly are made from the largest *Ox*, *Bull*, *Butts* what. *Steer*, or *Cow* Hides; and those are tanned *whole*, after the *Pates* and *Tails* are cut off, which are tanned *separately*: The Hides, thus tanned, are for the most Part called *Butts*, yet in some Places they call them *Bends*, viz. at *Bristol*, *Southampton*, and adjacent Places. 4. *BACKS* are as usually made from small *Backs* what. Hides, as from large ones, which, for the Conveniencies in tanning, and packing afterwards, are cut down the *Back* into two Parts; and hence it is, that, in taking an Account of this Sort, there may appear 11 *Sides* of Leather taken out; which in the Officers Books are expressed $5\frac{1}{2}$ *Backs*.

☞ The *Pates* and *Tails* of these, as well as of the *Butts*, Of the Pates and Tails. are cut from these Hides, and tanned separately.

N. B. That all the other Sorts of Goods, which are either *tawed*, *tanned*, or *dressed* in Oil, are distinguished by the Kind or Species that produces them.

☞ Though *Bends*, *Butts*, and *Backs*, are Names given to Leather, by those that deal and trade therein, yet they are Words not to be found in the Acts of Parliament relating to the Duties laid upon Hides, &c. And, since the Words used in the Acts are also used in Informations, it is necessary to insert both, viz.

When *Bends* are to be mentioned in Informations; say, Ten Pieces of Hides, commonly called *Bends*.

When *Butts* are to be mentioned, say, One Hide, commonly called a *Butt*, or four Hides, commonly called *Butts*.

When *Backs* are to be mentioned, say, One Piece of an Hide, commonly called a *Back*, or six Pieces of Hides, commonly called *Backs*.

And, by observing this Method, the Leather mentioned in the Information will be sure to agree both with the Evidence and Acts of Parliament.

A Compendious Table (which will be very useful both to the Officer and Trader) shewing the Total Rates to be paid for Hides, Skins, &c. that are dressed in Oil, Tawed or Tanned in Great-Britain.

1. *Skins, Hides, &c. which are DRESSED IN OIL.*

		<i>l. s. d.</i>	
SHEEP and Lamb	_____	0 0 3	} <i>per Pound.</i>
Hides	_____	0 0 6	
Deer	_____	0 0 8	
Goat and Beaver	_____	0 0 8	
Calf-Skins	_____	0 0 2	
Skins and Pieces, &c. <i>ad Valorem</i> , at 15 per Cent. and also	_____	0 0 2	

2. *Skins, Hides, &c. which are TAWED.*

Sheep and Lamb	_____	0 0 1 $\frac{1}{2}$	} <i>per Pound.</i>
Calves and Kipps	_____	0 0 1 $\frac{1}{2}$	
Buck and Doe	_____	0 0 6	
Calves Slink without Hair, Dog, and Kid	_____	0 1 0	} <i>per Dozen.</i>
Beaver and Goat	_____	0 2 0	
Calves Slink with Hair	_____	0 3 0	
Horse-Hides	_____	0 1 6	} <i>per Hide.</i>
All other Hides	_____	0 3 0	
Skins and Pieces, &c. <i>ad Valorem</i>	_____	30 0 0	
			<i>per Cent.</i>

3. *Skins, Hides, &c. which are TANNED.*

Sheep and Lamb	_____	}	<i>at</i>	0 0 1 $\frac{1}{2}$	<i>per Pound.</i>		
Butts and Backs	_____						
Hides	_____						
Calves and Kipps	_____						
Hogs and Dogs	_____						
Roans	_____	}	<i>at</i>	{	0 0 2	}	<i>per Pound.</i>
Goats tanned with Shumack	_____						
Skins and Pieces, &c. <i>ad Valorem</i>	_____		<i>at</i>	30	0 0		<i>per Cent.</i>
Parchment	_____	}	<i>at</i>	{	0 1 6	}	<i>per Dozen.</i>
Vellum	_____						

*To save the Officer and Trader the Trouble of computing the Amount of the Duty of those Goods, which pay Duty *ad Valorem*, after the Rates of 15*l.* and 30*l.* per Cent. I have calculated the two following Tables.*

A Table

A Table at 15 per Cent. ad Valorem, per C. Leadbetter.

A Table at 30 per Cent. ad Valorem, per C. Leadbetter.

New Tables at 15 and 30 per Cent. ad Valorem.

Value being		Duty is		Value being		Duty is		Value being		Duty is		Value being		Duty is	
s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
0	5	0	0 ³ / ₄	10	5	1	6 ³ / ₄	0	2 ¹ / ₂	0	0 ³ / ₄	5	2 ¹ / ₂	1	6 ³ / ₄
0	10	0	1 ¹ / ₂	10	10	1	7 ¹ / ₈	0	5	0	1 ¹ / ₂	5	5	1	7 ¹ / ₂
1	3	0	2 ¹ / ₄	11	3	1	8 ¹ / ₄	0	7 ¹ / ₂	0	2 ¹ / ₄	5	7 ¹ / ₂	1	8 ¹ / ₄
1	8	0	3	11	8	1	9	0	10	0	3	5	10	1	9
2	1	0	3 ³ / ₄	12	1	1	9 ³ / ₄	1	0 ¹ / ₂	0	3 ³ / ₄	6	0 ¹ / ₂	1	9 ³ / ₄
2	6	0	4 ¹ / ₂	12	6	1	10 ¹ / ₂	1	3	0	4 ¹ / ₂	6	3	1	10 ¹ / ₂
2	11	0	5 ¹ / ₄	12	11	1	11 ¹ / ₄	1	5 ¹ / ₂	0	5 ¹ / ₄	6	5 ¹ / ₂	1	11 ¹ / ₄
3	4	0	6	13	4	2	0	1	8	0	6	6	8	2	0
3	9	0	6 ³ / ₄	13	9	2	0 ³ / ₄	1	10 ¹ / ₂	0	6 ³ / ₄	6	10 ¹ / ₂	2	0 ³ / ₄
4	2	0	7 ¹ / ₂	14	2	2	1 ¹ / ₂	2	1	0	7 ¹ / ₂	7	1	2	1 ¹ / ₂
4	7	0	8 ¹ / ₄	14	7	2	2 ¹ / ₄	2	3 ¹ / ₂	0	8 ¹ / ₄	7	3 ¹ / ₂	2	2 ¹ / ₄
5	0	0	9	15	0	2	3	2	6	0	9	7	6	2	3
5	5	0	9 ¹ / ₂	15	5	2	3 ¹ / ₄	2	8 ¹ / ₂	0	9 ¹ / ₂	7	8 ¹ / ₂	2	3 ¹ / ₄
5	10	0	10 ¹ / ₂	15	10	2	4 ¹ / ₂	2	11	0	10 ¹ / ₂	7	11	2	4 ¹ / ₂
6	3	0	11 ¹ / ₄	16	3	2	5 ¹ / ₄	3	1 ¹ / ₂	1	11 ¹ / ₄	8	1 ¹ / ₂	2	5 ¹ / ₄
6	8	1	0	16	8	2	6	3	4	1	0	8	4	2	6
7	1	1	0 ³ / ₄	17	1	2	6 ³ / ₄	3	6 ¹ / ₂	1	0 ³ / ₄	8	6 ¹ / ₂	2	6 ³ / ₄
7	6	1	1 ¹ / ₂	17	6	2	7 ¹ / ₂	3	9	1	1 ¹ / ₂	8	9	2	7 ¹ / ₂
7	11	1	2 ¹ / ₄	17	11	2	8 ¹ / ₄	3	11 ¹ / ₂	1	2 ¹ / ₄	8	11 ¹ / ₂	2	8 ¹ / ₄
8	4	1	3	18	4	2	9	4	2	1	3	9	2	2	9
8	9	1	3 ³ / ₄	18	9	2	9 ³ / ₄	4	4 ¹ / ₂	1	3 ³ / ₄	9	4 ¹ / ₂	2	9 ³ / ₄
9	2	1	4 ¹ / ₂	19	2	2	10 ¹ / ₂	4	7	1	4 ¹ / ₂	9	7	2	10 ¹ / ₂
9	7	1	5	19	7	2	11 ¹ / ₄	4	9 ¹ / ₂	1	5 ¹ / ₄	9	9	2	11 ¹ / ₄
10	0	1	6	20	0	3	0	5	0	1	6	10	0	3	0

C H A P. XI.

Concerning the Business and Duty of those Officers of the Excise, who survey Tallow-Chandlers in the Country, so as to prevent their evading the Duty, and defrauding the Revenue.

EVERY Chandler or Maker of Candles, except Compounders, Chandlers obliged to make true and particular Entries of their Workhouses, Storehouses, Utensils, &c. every six Weeks, and the Officer is to take Care to see that the Office-keepers, when they receive such Entries, do immediately write upon each Entry the Day of the Month, and the Year of our Lord when they receive them, and sign their Names thereto, and put them upon a File, which must be carefully locked up; and the Officer is, from Time to Time,

Immediately to
repair to the
Persons making
Entry.

When Foot Of-
ficers must sur-
vey Chandlers.

Riding Officers
to survey Chand-
lers early and
late at uncertain
Hours.

The Particulars
that must be ex-
pressed in every
Entry.

Of the Entry of
Mould Candles.

Of Frauds in
Mould Candles.

as such Entries are made, to copy the same into a Book for that Purpose, and those Copies are to be attested by the Office-keeper, and as soon as possible, after any such Entry is made, and copied, the Office is to require the Person who made it, to shew him every Melting-house, Work-house, Ware-house, Store-house, Shop, Room, or other Place, and also every Copper, Kettle, Pot, Mould, or other Vessel or Utensil, expressed therein; and the Officer must insert, in his Entry-Book, the Situation of all those Places, and mark the Particulars in such Manner, as may enable him, or the Supervisor, or any other, readily to find the same.

The Foot Officer must survey every Chandler in his Division, at least once in six Hours, when at work, and never less than twice a Day when silent; but oftener where any Fraud is suspected; and these Visits must be as early in the Morning, and as late at Night as possible; and it is requisite that the Officer should sometimes survey such as have made their Declarations, between the Time of his receiving those Declarations and the Hour declared for Beginning; however, he must not exceed three Hours after the Time declared, that he may discover whether the Chandler begins before, or within three Hours after the Time mentioned in his Declaration.

Riding Officers must survey their Chandlers in Rides on uncertain Days, and at uncertain Times of the Day; sometimes as early in the Mornings, and sometimes as late in the Evenings, as possible; and as often as he can, twice in a Day when he has a Declaration depending.

All Tallow-Chandlers, or those who make Candles for Sale, before they begin to work upon, dip, or make any Course, or making of Candles, or light any Fire under any Copper, Kettle, or other Utensil, for the melting Tallow, or other Materials for the making Candles, or spread any Ruffs, or Cottons, are obliged to make and deliver (or cause to be made and delivered) to the Officer in whose Survey they are, a Declaration in Writing, containing,

1. A True Account of the Number of Sticks, of which such making is intended to consist.
2. An Account of the Sizes, and true Number of Candles intended to be made on each Stick.
3. The particular Hour and Time of the Day, or Night, when such Course or Making is intended to be begun.

And if the Making or Course of Candles shall not be begun, or proceeded upon at the Hour and Time mentioned in such Declaration, or in three Hours next after that Time, then the said Declaration is to be void.

N. B. But, if such Course or Making is intended to be of Mould Candles, the Maker shall declare to the Officer, before he begins to fill any of the said Moulds, how many Moulds he intends to fill, and how often he intends to draw the said Moulds at such Making. & Wherever the Officer has Reason from any Circumstance to suspect unfair Practices, and observes any

any

any considerable Difference in the *Forwardness* of a Making of Candles, or in any particular Size therein, *viz.* as some of them to be made about $\frac{3}{4}$, when others are but $\frac{1}{4}$, in such Case he must, by such Characters, denote the Difference against such Stick, and make *quick Returns*, upon such Chandler, in order to prevent or discover any unfair Practice, by carrying off those Sticks and Candles that are *near finished*, and supplying their Place by others privately brought in: And in this Case, the Officer should frequently look through *all Parts* of the House, or other Place, that may be convenient for carrying on such Frauds; *especially*, such Places as have been entered, and he must observe, the Condition the Copper and Mould are in, whether they are *warm*, or not: He should also take Notice of the Colour, or Condition of the Candles in Stock, and also the Size of them, in order to find out if the Chandler has a greater Quantity of any Size than has been charged upon him. The Officer should likewise make Observation concerning the Stock of Tallow, and the Condition of the Tubs wherein it lies, that he may discover if any be missing between his Surveys; and what else he thinks may be of use to discover whether the Chandler works fairly or otherwise. As soon as the Officer finds a Making of Candles finished, he must desire to have them weighed, if in a Condition for it; but if not, he must take an *Estimate* of them, by trying a Pound, or other small Quantity of each Size, and he must enter the Sizes according to what he finds them to be by such *Estimate*; and he is to cast up that *Estimate*, if he finds any of the Sizes different from the Chandler's *Declaration*, or his own *former Account*. If they are not different from, but agreeable to what was entered before in his Book, then he need not be at the Trouble to cast it up. The Officer must be careful to return in *due Time*, to weigh the Candles, and enter the *several Draughts* in his Book, as he weighs them; and he ought to compare the whole with the Chandlers *Declaration*; and, if he observes any of the *Sticks* or *Candles* to be missing from a *former Account*, he must then charge so much as such Candles so missing may reasonably be supposed to weigh, and acquaint the *Collector* and *Supervisor* therewith; it being the *Collector's Province* to see that an Information be laid, for fraudulently removing them before they are weighed; and if he suspects that the Sizes differ from the *Declaration*, he must weigh each Size *separately*. The Officer ought to be very careful before he begins to weigh any Making, that the *Tare* of the *Frame* or *Basket* on which the Candles are hung, be truly balanced, or else that the *Tare* thereof be *exactly adjusted*, and entered in his *Book*, before he sets down any *Draught*; and if he does not balance the Rods on which the Candles are made, with a like Number of other Rods, he must deduct the *Tare* of the Rods, as well as the *Tare* of the *Frame* out of every *Draught* before he puts it down, and he ought to be very careful that he is not imposed upon by false *Scales**, or *Weights*, or by counter-balan-

Methods to prevent Frauds.

Officer to desire the Candles to be weighed as soon as made, or make an Estimate.

Other Frauds how to be guarded against.

Collector and Supervisor to be acquainted when Candles are missing.

To see the Tare of the Frame, or Baskets, and Rods well adjusted.

To guard against unfair Scales and Weights.

How the Duty is to be allow'd for crack'd Candles.

Supervisor's Duty as to crack'd Candles.

When Candles are not like to be finished till late at Night.

Chandlers must be kept up to their Duty.

How to proceed when the Chandler refuses to admit to survey.

The Form of a Demand of Admittance.

When the Officer is to demand Admittance in the Presence of a Constable.

cing those Sticks whereon the Candles are, with others that are of a much greater Weight. When it so happens that Candles are crack'd and spoil'd, in making, and the Chandler intends to have them defaced, and the Duty allowed him for the same, the Officer must at the Time of Weighing the Making, of which such crack'd Candles are a Part, take Notice in his Book, by a Memorandum, that Part of the Candles of such Making are crack'd, and he must also enter an Estimate, as near as he can, of the Quantity that are so crack'd, and desire the Chandler to keep them till the Supervisor comes, who must examine them, and if he has good and sufficient Reason to believe that there are such only as were crack'd and spoil'd in making, he is to weigh and see them utterly defaced, that no Part thereof may be left in a Condition to be burned, and the Supervisor is to certify, in the Officer's Books, the Quantity defaced, and for such and no other, is the Chandler to have an Allowance out of the next Candles he makes. It is highly requisite, where any making of Candles is depending in the Town the Officer resides in, and which are not likely to be finished till late at Night, that he contrives his Surveys, so as not to fail taking an Account of them that Night, by Estimation, or Weigh, after they are finished, and see that the Mould is drawn, and Fire from under the Copper. And where the Officer suspects any Chandlers to commit Frauds, he ought to survey them once or oftener on a Sunday. It is the Business of an Officer, to be careful to keep the Chandlers up to their Declaration, and to all other Parts of their Duty; and when he observes they neglect, or refuse to perform the same; or when he discovers any Fraud, he must acquaint the Collector or Supervisor therewith; for it is their Province to see that the Offender is prosecuted according to Law. Notwithstanding the Imprudence some have formerly been guilty of, I'm inclined to believe there are none now, who are subject to this Duty, so stupid as to refuse the King's Officer free Ingress and Regress; yet, since 'tis possible, that to cover a Fraud, he may sometimes be denied Admittance. I shall here set down how his Duty requires he should proceed when it is refused him. The Officer when he demands Admittance or Entrance at, or into any Chandlers, &c. he must first, for a reasonable Time, Ring, Call, or Knock, at the Chandler's Gate or Dwelling-house, or such other Place where he has before usually procured Entrance; and if he be not admitted upon so doing, he must, with a plain and audible Voice, make a Demand at the said Gate, Dwelling-House, or other Place, in Words to the following Effect, viz. "I, *John Smith*, Gauger, or Officer of Excise, do demand Entrance into the Work-house of Mr. *John Smith*, to survey, or take Account of his Candles according to Law." And, if the Demand be made between the Hours of Eleven in the Evening and Five in the Morning, it must be in the Presence of a Constable, and he is to mention in his Demand, that a Constable is with him; but

but if the Demand be made between *Five* in the *Morning* and *Eleven* in the *Evening*, though at such Time he may demand Entrance without a *Constable*, yet he ought, if possible, to have some sufficient Witness present, to prove his demanding Entrance as aforesaid; and after he has so done, he is to stay a *reasonable* Time, before he goes away from the House or Place, and must enter the whole of his Proceedings in his Book; and if it is possible for him to do it, he should, when he is denied Entrance, acquaint the *Chandler* or his *Servant*, with the Danger of such Behaviour, and the Penalty incurred by such Refusal.

A Witness should be present when Entrance is demanded.

The Chandler or his Servant to be warned of the Penalty incurred by such Refusal.

C H A P XII.

Concerning the Business and Duty of those Officers of the Excise, who survey Soap-makers, so as to prevent their evading the Duty or defrauding the Revenue. Also of the Drawback on SOAP, employed in making of Cloths, &c. and of making up the Accounts of the Manufacturers to obtain it, with the Forms of the Affidavits * required by Law.

BEFORE I treat of the Duty of the Officer, I think it will be requisite to give him some Insight into the Way and Method of making the several Kinds of Soap.

The principal Ingredients, which are used in making all Sorts of Soap, are Lyes drawn from *Ashes* or *Lime*, boiled up with *Tallow* or *Oil*, or both. The different Ways of making the several Sorts of soft Soap are various, and the Time that is required to bring it to Perfection somewhat uncertain; but it commonly takes up Part of Two Days, and, when 'tis boiled enough, it is put into Casks. The Method of making Ball-Soap, (which is commonly used in the North) is this: The Lyes are put into the Copper and boiled about 24 Hours, until the Watery Part be quite gone, and nothing but a Sort of nitrous Matter (which is the very Strength or Essence of the Lye) remaining; to which the Tallow is put, and the Copper kept boiling and stirring for above Half an Hour; in or about which Time the Soap is made; and then 'tis put out of the Copper into Tubs or Baskets with sheets in them; and immediately while it is soft, it is made into Balls. Hard Soap is generally boiled at twice; the first of which is called an Half-Boil; and, before that Operation is perfected, the Lyes are separated from

Of what and how Soap is made.

Various Sorts of soft Soap.

Ball Soap, what, and how made.

Hard Soap, how made.

Half-boiled, what.

* It is not required that these Affidavits should be on Stamp-Paper, and for the writing them the Officer is to take 4d. and no more.

Graining, what.

Is hardened in a Frame.

Frauds in making of hard Soap.

Other Frauds by adding fresh Lyes.

Other Frauds by pretending Half-boilis Wet-bottoms, &c.

Nice Observations for preventing Frauds.

Of Foot-walks.

Of Rides.

the Tallow Part by *Salt*, which is called *Graining*; then the Copper is charged again with *fresh* Lyes, which with the first *Half-Boil* is boiled until it be *grained* as in the first *Half-Boil*; after which, the *Soap* is taken out of the Copper, and put into a *Frame* to cool and harden. It has been frequently experienced, that a Boiling of *hard* Soap hath been made at one Operation, especially where *Frauds* are intended; in which Case, nevertheless, the Makers pretend, that it is only *Half-Boil* and *imperfect*, yet in the Absence of the Officer carry away all or Part thereof, and before his Return bring *fresh* Lyes and Tallow to such a Forwardness in the Pan or Copper, as to be taken for the pretended *Half-Boil* under the *second* Operation. It is also well known, that it hath been a frequent Practice; after *perfect* Soap hath been put into the *Frame*, and the Officer hath taken an Account of it; to take a *Part* thereof out, and, then by adding *hot* Lyes to the Remainder, bring the Soap up to the same *Depth* and *Quantity* as it was before: For which Reason, if the Officer observes that any fresh Lyes are heating in any Pan or Copper, while the Soap is *hot*, or newly put into the *Frame*, a Fraud may reasonably be suspected, and by a sudden Return discovered. There have been frequent Instances where Soap-makers have brought *Half-Boil* to be put into the Pan or Copper, and *new made*, under Pretence of its being *Wet-bottoms*, *Cuttings*, or *Scrapings* of *fram'd* Soap, and as such have demanded an Allowance: But such unfair Practices may probably be prevented or discovered by the *two* Observations following, *viz.* First, Soap, if it be *strong*, will be *very thick*, and what is taken up *near the Lye* will be *bright*, and have a Grain like Pease; and, if *squeezed* betwixt the Fingers, will *shine* and *scale* if bended; and such Soap being put into the *Frame*, and no Lyes put to it afterwards, will *sting* the *Tongue*, if touch'd with it. Secondly, But if Soap be *weak*, 'twill have a *faint Smell*, and the Body will be *thin*, and it will either have *no Grain*, or what is *very small and pale*, and, if *squeezed* as above, will feel *greasy*; it will be soft, because not boiled to a *real Body*; and *dull* and *not smooth*, because not purified with the *second Lyes*.

The Officer who has a *Foot-Walk* must survey every Soap-house in his Division *once* in *six Hours*, or oftener, when the Soap-maker is at work; and he should never less than *twice* a Day, when silent: And it is most adviseable that it be done as *early* in the Morning, and as late at Night, as possible. But if he has received a Notice for working, or finds any *Preparation* for Work, or he suspects any *Fraud* in any of these Cases, he must be more frequent in his Surveys. The Officer that has a *Ride* must survey the Soap-makers as often as possible on *uncertain Days*, and at *uncertain Times* of the Day, when there is not a Notice depending: But if he has a Notice for working, he must contrive his Surveys to be at such Times as may best prevent or detect Frauds; especially, let him endeavour to survey

survey about the Time of *finishing*, and the should stay if his other Business will permit till the Soap is struck off.

Take Notice, that no Soap-maker must *begin to make or work* upon any Making of Soap of any Sort or Kind whatsoever, nor put any *Lees* or *Lye* into the Copper or Pan for the making Soap, without giving to the Officer of the Division where such Soap is to be made, *Notice in Writing* of the particular Time and Hour when such making is intended to be *begun*, 24 Hours before such Beginning of every such Making: But, in case such intended Making of Soap shall not be begun to be worked upon, and to be actually making within *twelve* Hours after the Time mentioned in the Notice, *that Notice is void*, and the Soap-maker must not begin to make or work upon such Making, without giving a *new* or other like Notice as aforesaid. But if a *hard* Soap-boiler does not intend to go on with his *second* Boil, as soon as he has finished his *first* Half-boil, the Officer is to require him to mention, in his Notice, the Time when he intends to begin to work on his *second* Boil; and if he does not go on with his *second* Boil according to the Time mentioned in that Notice, he must give a *new* Notice in the Manner before mentioned; such *second* Boil, being in the Intention of the Law, a *beginning to work*. Now when the Officer receives a Notice for Working, he must immediately enter it on his Book. 1. The Time when he read it. 2. The Person's Name who signed it. 3. The Time of their beginning to work, and put the Notice on a File for that End and Purpose. It is highly requisite, that where the Officer meets with the Making of *Soft* Soap lying upon the *Damp*, either knitting, or immediately before it be cleansed into the Casks, he should take the *dry Inches* of the Copper, at some *fixt* or remarkable *Place* thereof, and enter the same in his Book, in order to discover whether any Part thereof hath been conveyed away, before his succeeding Visit; or to make an *Estimate* from the Produce of some *preceding* Boilings, what any *succeeding* Boilings will be; and where the Desparity is considerable, a *Fraud* may be suspected. The Officer, *before 'tis boiled off*, must take and enter the exact *Tare* of each *Cask* upon it, and also enter the said *Tare* at the End of his Book, and give necessary Attendance at the emptying it out of the Copper; inserting in his Book the Numbers and Sizes of each Sort of Casks, which are, or ought to be, *Barrels*, *Half-Barrels*, *Firkins*, or *Half-Firkins*, each Barrel containing 256lb. and the Firkin 64lb. *Avoirdupoise*, besides the Weight or Tare of the Cask. Then as to *Ball-Soap*, the chiefest Security of the Duty depends upon a due Attendance of the *Cleanings*, and therefore the Officer is more particularly required to be present at the Time of its being struck out of the Copper, and also at the Time of *Tallowing*, and to continue there till it is *struck off*; and to weigh the same, before it be made

No Soap-maker to make without giving the Officer 24 Hours Notice.

And if he does not begin in 12 Hours after the Time mentioned in such Notice, the Notice to be void, and a new Notice must be given.

Notice must be given of working the second Boil.

Must take the Notice in, &c. What such Entry must set forth.

How the Officer may guard against Frauds.

Must enter the Tare, and mark it on the Cask.

And attend whilst emptying out of the Copper.

What a Barrel, and what a Firkin of Soap contains.

Of securing the Duty on Ball-Soap.

When it must be weighed.

Returning Soap into the Copper, upon Pretence of keeping it warm.

The Officer should make sudden Returns, And should attend before the Cleansing of hard Soap, &c.

At the coming off of a Boil to examine the House.

Of the Scales and Weights.

To observe the Surface of the Soap in the Frame, and comparing the Weight and the Frame Gauge.

Of Hard Soap, with the cubical Inches in a Pound, and Divisor for square and circular Measure, and the Gauge Point. Of green soft Soap with cubical Inches in a Pound, and Divisor for circular Measure, and the Gauge Point. Of White Soft Soap, with cubical Inches in a Pound, and Divisor for circular Measure, and the Gauge Point.

made into Balls. By all Means the Officer must take Care that the Soap-Bailers do not impose upon him, by returning Soap not thoroughly fallowed, into the Copper, if it has been weighed, under a Pretence of keeping it warm, and afterwards add fresh Tallow to it; and therefore, in order to prevent the Soap-Bailers so doing, the Officer should, as often as possible, make a sudden Return after he has weighed it. The Officer, if it be possible, should always be at the House before they begin the cleansing of hard Soap, and attend till it is all put into the Frame. Also it is very necessary, at the coming off of any Sort of Soap, to inspect in a more particular Manner the enter'd Parts of the House, and where the Officer suspects a Fraud, such other Parts, as may be useful for that Purpose. When any Boiling of Soap is to be weighed off, great Care should be taken that the Weights and Scales are just; also it should be observed from the Surface of the Soap, or otherwise, whether any Part of the Boiling hath been diminished; and where the Weight of Hard-Soap comes short of the frame Gauge, one Pound in Ten, or in Proportion thereto, he may reasonably suspect a Fraud, and in such Cases make the Charge from the Frame Gauge. It will be expected from the Officer, where he can attend the cutting up of a Boiling of Soap, that he enters down in his Book the Number of Pieces, into which it is cut (provided the same be not weighed off before he departs the House;) which he must have a strict Regard to, upon the Weighing; and enter the particular Number against each Draught; but he must at all Times endeavour to weigh it off in Slabs before it be cut into small Pieces like Bricks; and this for a Reason which I need not suggest. *N. B. That the Cubical Inches contained in a Pound of hard Soap, are 27.14, which Number is the common Divisor for square Measure, and 3.2 the Gauge Point on the Rule; and 34.55 the Divisor for circular Measure. 5.878 will be the Gauge Point on the Sliding Rule. N. B. That the Cube Inches in a Pound of Green soft Soap are 25.67, and 5.07 the Gauge Point; so that 32.68 will be a common Divisor in all circular Measure, and 5.716 the Gauge Point on the Rule for this Sort. N. B. That the Cube Inches in a Pound of White soft Soap are 25.56, and 5.05 the Gauge Point; therefore 32.54 will be a common Divisor in all circular Measure, and 5.704 the Gauge Point on the Sliding Rule.* The Officer, when any Soap-maker offers to return into the Copper, decayed, rotten, or Cuttings and Scrapings of good Soap, to be refreshed and new made: On these Occasions, the Officer is to endeavour, by the best Means he can, to discover whether it is Soap, or an Half-Boil only intended to be imposed upon him as Soap; and if Soap, whether the Duty hath been paid or charged for the same; and if he cannot receive full Satisfaction therein, he is to make no Allowance in respect thereof. Nor is he

to make Allowance for any Soap returned into the Copper, except the Soap-maker has given him Notice in Writing of his Intention to return such Soap 24 Hours before the Time of putting the same into the Copper; and, as soon as any such Notice is given, the Officer must enter it in his Book under his last Survey, and put the Notice on a File; and, if the Supervisor be in Town, he is to be informed, that he may see the same returned; but in Case the Supervisor cannot be applied to, or cannot attend, and there be any other Officer (or Officers) who reside in the same Town, the proper Officer should give Notice to such Office, (or to such of the Officers as can best attend;) that he, as well as the proper Officer, may see the Soap weighed, put into the Copper, and melted down: And the Supervisor, or the Officer, who sees it returned, must sign the proper Officer's Books, to attest or witness the same*.

Of the Drawback on SOAP.

All Soap spent, employed, or consumed in making Cloths, Serges, Kerseys, Bays, Stockings, or any other Manufactures made of Sheep or Lamb's Wool; or in preparing the Wool for the same, or in whitening new Linen in the Piece, on Oath or Affirmation of the Workmen, is intitled to a Drawback.

And one Pound of Soap is allowed to scour or wash twenty Pounds of Worsted Yarn.

And half a Pound of Soap is allowed to scour one Piece of Burving Crape made of Sheep or Lambs Wool in England; and that, for every Dozen Pounds of Soap thus used, there shall be a Drawback of the Duty of 10 d. to every Dealer.

Now in making up of any Scowerer of Worsted's Account, in order to have the Drawback, if they are acquainted with it, and therefore have not had any Allowance, but, being informed of it, would have Accompts drawn up for that Purpose; they must propose some certain limited Time, allowing some Quantity of Soap used each Week, or else a Quantity of Worsted, or Pieces of wrought Woollen every Week, and then by the Proportions and following Work their Accompts may be stated.

Example. I. Suppose a Scowerer has used two Pounds of Soap per Week, and his Accompt is of eight Years standing, how must this Accompt be stated?

* See Page 332.

Example II. If I have 16680 Pounds of *Worsted Yarn*, how many Pounds of Soap will they take to scour them? Example II.

See the Work.

lb. Soap. lb. Worsted.
As 20 is to 1, so is 16680

Operation.

1
20) 16680 (834 Pounds of Soap.
...

The Form of an Affidavit for Pieces of Burying Crape.

An Affidavit for Burying Crapes.

From Sept. 3, 1735, to Jan. 6, 1736, inclusive.

I *Thomas Nesom*, Weaver, living at the Sign of the Crown in *Hollywell Lane*, in the Parish of *St. Leonard's, Shoreditch*, in the County of *Middlesex*, make Oath, that I have used *Seven Hundred and Ten Pounds* of *British Soap*, in scouring of *One Thousand four Hundred and twenty Pieces of Burying Crape*, made of *Sheeps or Lambs Wool*, at *Hollywell-Lane*, above said, from *Sept. 3, 1735, to Jan. 6, 1736, inclusive*, for which I have had no Allowance according to Act of Parliament in that Behalf made.

2l. 9s. 3d. 2 $\frac{3}{4}$ q.

THOMAS NESOM.

N. B. If the Workman moves from one Place to another, in the Time for which the Entry is made, he must mention each particular Quantity of Soap used at each separate Place of his Abode. What to be observed, if the Workman has removed.

CH A P. XIII.
Concerning the Business and Duty of those Officers of the Excise who survey Starch-makers, so far as to enable them to understand the Nature of that Manufacture, and to prevent the Maker from evading the Duty or defrauding the Revenue.

BEFORE I treat of the Duty of the Officer, I think it highly requisite to inform him of the Way and Method of making STARCH, which is as follows.

1. When *Wheat* is ground, the *Mel* of it is put into a large Vessel or *Fat*, and then *Water* is put to it, where it lies and ferments from *seven to fourteen Days*, according as the Season is made. Of what Starch is made. How long a fermenting.

A a z

of the Year or Weather keeps it back, or forwards its Operation.

It settles to the Bottom, the Water drawn off. The Meal put in to fresh Water, and strained.

Settles to the Bottom. Is strained thro' a Lawn-Sieve.

2. When it hath had *sufficient* Fermentation, it will settle to the Bottom of the Fat; and then, the Water being taken off, the *settled* Part is discharged from the Fat into a Tub, and there, as it is put into the Tub, it is stirred up with *fresh Water*, and then strained through a *Hair-sieve*, (to separate the coarse Bran from it) into several other Tubs which are called *Sour-Waters*, where it commonly lies *two Days*, in which Time, not being disturbed, the *Meal* will settle to the Bottom.

3. The *Water* is then taken or drained off, and then the Tubs are turned upon their *Sides* or *Edges*, and the Surfaces of those Bottoms are dashed with *fresh Water*, and what is so washed off is called *Slimes*; the Tubs are then turned upon their *Bottoms* again, and what remains is stirred with *fresh Water*, and then strained into other Tubs through a *Lawn-sieve*; two or three *Sour-Waters* are generally washed into one, which are called *Green-Waters*; when it has lain thus *two or three Days*, the *Green-Starch* is settled to the Bottom; and then the *Water* is taken off, and the Tubs turned on their *Sides* or *Edges*, when the Surfaces of the Bottoms are dashed with *fresh Water*, and that which is thus washed off, is called *White-Waters*.

Is put into Boxes to be dried.

4. Then the *Green-Starch* which remains at the Bottom is put into the *Boxes*, (wherein it must be gauged) and in a little Time it will be drained and grow hard. After this, it is turned out of the *Boxes*, and broke into large Pieces, which are laid upon Bricks to dry, where it commonly lies from two to three Days.

Is put into the Stove.

5. It is then taken down and put into the *Stove*, for the Space of *two Days*, when it will come, which they call a *Crust*, i. e. it will be covered with a hard Substance, which, being scraped off the *Pieces*, are put into the *Stove* again, and the *Scrapings* are laid upon *Hair-Cloths*. The *Scrapings* will be dry and fit to weigh off in *two Days*; and, in *one Day* more, the *Pieces* will be *grained*, viz. they will become *Starch* fit for Sale.

Officer must see they make Entries.

The Officer must be careful that all the *Starch-makers* under his Survey do make *Entries* of all their *Work-houses*, *Store-houses*, or other Places, together with all their *Tubs*, *Fats*, *Boxes*, *Troughs*, *Stoves*, *Kilns*, &c. for making, drying, or keeping of *Meal*, *Flour*, *Starch*, or any other Materials requisite to be made into *Starch*. All which *Entries* he must copy into a *Book*, and describe the Situation of the *Drying-Places*, *Rooms*, and *Store-houses*, as is directed in *Chap. III. and V.* in relation to the *Excise on Malt*.

The Vessels and Boxes must be numbered.

The Officer must *number* and *gauge* all *Fats* and *Boxes*, and enter their *Dimensions* and *Areas* in his *Dimension-book*, noting that the *Areas* of the *Fats* are to be in *Bushels*, and *decimal Parts*; but the *Areas* of the *Boxes* in *Pounds* and *decimal Parts*. In the *Beginning* of every *Starch-book*, the Officer must enter, (from

(from his Dimension-book) the *Dimensions* and *Areas* of each Starch-maker's *Fats* and *Boxes*; and also, a *Scheme* of the *Entries*. As to the finding the *Areas* of the *Fats*, Experience Of finding the *Areas* has discovered, that one *Bushel* of *Meal*, after it has done for Area and Gauge fermenting and is settled, contains 2300 cubical Inches; and therefore 2300 is the *Divisor* for finding the *Areas* (in *Bushels*) of any square Vessel, and 2928.45 is the *Divisor* for finding the *Areas* of any circular Vessel, and 54.1 is the *Gauge Point* on the *Sliding Rule*. The Officer must likewise note, that he is to reckon 25 *Pounds* of *Starch* for every *Bushel* of *Meal*, so that the *Number* of *Bushels* of *Meal* in any making being multiplied by 25, the *Product* will be equal to the *Number* of *Pounds* of *Starch* such *Quantity* of *Meal* is thus supposed to yield or produce as aforesaid. Then, as to finding the *Areas* of the *Boxes*, it has been discovered, that the cubical Inches contained in a *Quantity* of *green Starch*, which will produce a *Pound* of *dry Starch*, is 34.809, and that is the *Divisor* for finding the *Areas* (in *Pounds*) of square Vessels of *green Starch*, and 44.32 is the *Divisor* for finding the *Areas* in *Pounds* of circular Vessels, and 6.66 is the *Gauge Point* on the *Sliding Rule*. When the Officer finds that the *Number* of *Pounds* of *Starch*, according to his *Gauge* in the *Fat*, do considerably exceed his other *Accompts* from the *Boxes* and *Weight*, so that he has Cause to suspect a *Fraud*, he is then to charge from such *Gauge* in the *Fat*; but, otherwise, his *Charge* must be made from his *Gauge* in the *Boxes*, or from the *Weight*, whichever of them is the best.

The Officer, in the Place of his Residence, must survey each Starch-maker at least once every Day when there is any *Steeping* in the *Fats*, or *four Waters* depending; but, when there are *green* or *white Waters* depending; not less than two or three Times a Day, and he must do it oftener (if it be possible) when they are a *boiling* or *setting the Stove*, and twice a Day when the *Stove* is *drying* after it hath been the second Time set. The Officer must survey Starch-makers in his Ride as often as the *Security* of the other Duties, under his Care, will permit: And this he must do at uncertain Times. But when the *Starch* hath passed its last *Straining*, he should be very frequent and close, that, if it be possible, he may get a *Gauge* of the whole in the *Boxes*. The Officer must, every Survey, observe the Condition of each *Fat*, but he need not to enter in his Book an Account of the *Fats*, unless when he finds an Alteration therein; but after it has done fermenting, and is settled, he must, if possible, take a *Gauge* of each *Steeping* in the *Fats*. The Officer must enter, in his Book, the *Number* and Condition of the several Sorts of Water-tubs, viz. the *Number* of the Tubs of *four Water*, *green Water*, &c. and also the Condition of the *Stove*. At the Time the Officer surveys, he must carefully examine all the entered Rooms, and such other

Of the Boxes.

Of the Boxes.

Places as may be convenient for carrying on *Trunks*; and he must likewise observe the Condition of the Starch from Time to Time, that he finds in the Boxes, in order to discover if it may be the same he took an Account of the last Survey, or not; and this will prevent the Maker's imposing upon him by their breaking out Boxes, and filling them again between his Surveys, and then pretending they are the same he had before taken an Account of. Since in each Making, the Starch-makers do usually break into a like Number of Pieces out of the same Box or Boxes, the Officer, by computing the Number of Pieces from the Boxes he had gauged, and by comparing them with the Size and Number of the Pieces he finds from Time to Time lying upon the Bricks, may discover whether he has been imposed upon by running of Boxes or green Starch from the Tubs; it is necessary he should, at the Time of Weighing, after the Stove is dried off, count the Pieces he finds standing in the Stove, and compute a Number of Pieces for what is broke down; I say, from the Weight of those compared with what is standing, he may easily discover whether any considerable Quantity hath been carried away before it was weighed.

Of white Waters, and Slimes, &c.

Of white Waters, and Slimes, &c.

Without great Care, the Officer may easily be imposed upon in the White Waters and Slimes, by the Makers representing them to be of little or no Value; and therefore with a Stick, or otherwise, he must get up some of what is at the Bottom, and examine its Quality and Quantity, by which he may judge what he is to expect from it. The Officer is to observe, that Starch will settle at the Bottom of green Starch-tubs very close after it has stood some Time, but by taking the Diameters of the Tubs, and the Depths of the Starch (which we may easily find by taking the Inches from the Surface of the Starch to the Top of the Tub) he may compute very near the Quantity of Starch in such Tubs contained.

See Page 199.

See Page 199.

The Officer having taken proper Care that he is not imposed upon by unjust Scales or Weights, for the Law obliges all Starch-makers to keep just and sufficient Scales and Weights for weighing their Starch, and to assist the Officer in making use of them, he must weigh the Starch, and must immediately enter into his Book the exact Weight of each Draught; and he must observe that all the Starch and Scrapings be brought out of the Stove and weighed; and he must not suffer the Makers to bring their Starch out of the Stoves, and break it down upon their Dressers to cool before weighing, but insist on having it weighed; and also the Scrapings, whilst it is hot (or at least whilst it is warm) that he may be able to distinguish the new from the old; and he is to observe, that the Scrapings usually amount to an eighth or tenth Part of the Making.

Of Weather-drying.

Of Weather-drying.

Where the Officer surveys Starch-makers that weather-dry, he must number all the Places or Lattices for laying Starch to dry,

dry, and, as soon as any Making is carried to dry, he must enter the Number of the Place where such Making is laid to dry, and make proper Observations until it is dried. Several Officers have been grossly imposed upon by the Makers, running foreign Starch, and pretending it was made in England; to prevent which, and several other Frauds, the Officer must take an Account of the old Stock of Starch in each Maker's Custody (if possible) every Time the Stove is set after Scraping; and also when he weighs off the Making; and likewise at the End of every Round, and at such other Times as the Superintendent or he shall judge necessary; and that he may take such Stock with the greater Certainty and Ease, before any Starch shall be put into any Case or other Vessel, in order to its being weighed or kept therein, he must take the Tare of such Case or Vessel, &c. and mark it thereon; and he must also enter such Tare at the End of his Book; and, when he shall take Account of the Stock, he must number all the Vessels containing the same with 1, 2, 3, &c. and enter those Numbers in a Column titled for that Purpose, at the End of his Book, and against each Number he must put the net Weight, &c.

The Starch-makers generally sell their Scrapings for Starch, or for making of Hair-powder, or Paste, &c. yet it sometimes happens they do not do so, but return them into the Fats in the Officer's Sight; in which Case he must take an Account of the Weight, and make an Allowance for the same out of the Gauges of those Makings, whereof such Scrapings are a Part. But then he must never make Allowance for more than he actually sees returned into the Fats and dissolved. Generally Scrapings are returned green, or not fully dried, for which the Officer ought to allow no more than it might reasonably be supposed such Scrapings would weigh in case they had been dried; and, for drying, it has been usual to allow One fifth Part. But if the Officer has Reason to believe that any Meal, Flour, or run Starch hath been mixed with the Scrapings, he is not to make any Allowance for any such Scrapings.

The Condition of the House must be entered on a Specimen-paper, each Survey the Officer makes; and he must take Care that the Starch-makers give Notice in Writing, of the Time, they intend to box Starch, Twenty-four Hours at least before they begin to box; for so the Law directs; and he is to attend the boxing as frequently as his other Business will permit.

All such other Injunctions and Restrictions contained in the Excise, Male, or any other Instructions, as far as they are applicable to this Duty, the Officer must punctually observe and comply with, as if the same were here at large repeated.

CHAP. XIV.

Concerning the Business and Duty of those Officers of the Excise, who survey Paper-Makers, so far as to enable them to understand the Nature of that Manufacture, and to prevent the Makers from evading the Duty, or defrauding the Revenue.

The several sorts, of what and how Paper is made.

Of the Hammers and Mortars, Of Half-Stuff, and mellowing it.

Of Fine-Stuff, Of the Fats.

Of the Moulds.

Of the Felt.

A Post of Paper

what.

Difference in Posts.

Of the pressing in Posts.

BEFORE I treat of the Duty of the Officer, I think it is requisite to inform him of the Way or Method of making Paper, which is as follows: The different Kinds of Paper are made either of Rags, Cables, or Ropes, &c. and Writing or Printing Paper is made of the finer Rags; and ordinary or Brown Paper of the coarser Rags, Ropes, Cables, &c. When the Rags are *sorted* and *washed*, they are put into Troughs called *Mortars*, each Mortar having to it *five Hammers*: In these Mortars the Rags are beaten into what is called *Half-Stuff*; and then they are laid to mellow in Tubs, Bins, or Chests, in some Part of the Mill or Corner of the Out-house; and when they are sufficiently mellowed, they are put into the Mortars again, and beaten until made into *Fine-Stuff*; and they are then fit to be made into Paper. In the Mill there is a Vessel called a *Fat*, but more properly a *Copper*, because there is a Fire kept under it; and into this Fat the Stuff that is so beaten is put to a sufficient Quantity of Water, and kept to a certain Degree of Heat, about luke-warm, and this is the last Preparation for making Paper. There are *Moulds* to answer each Size of Paper designed to be made, and the Bottom of each Mould is of *Brass Wire*, somewhat resembling a fine Sieve; and these Moulds are dipped into the Fat, and are so handled by the Dexterity and Skill of the Workman, that the Water runs thro' the Wires of the Mould, and the beaten Stuff only remains behind therein; and then it is gently turned out of the Mould, and laid on a Woollen Cloth, which is called a *Felt*, and, when it is laid on the Felt it appears as a perfect Sheet of Paper; then another Felt is laid upon that Sheet, and again another Sheet upon that Felt, and so on till they have raised an Heap of seven or eight Quires, which is called a *Post*. *Note*, That each Post generally contains the same Number of Quires, as there are *Days* intended to be made that Day: But some Workmen will make but five Quires in a Post, and then he makes 28 or 30 Posts in a Day, which makes the same Quantity. The Post being put into a *Press* and pressed very hard together, till the Water is squeezed out; it is not suffered to continue in the Press, but it is immediately taken out again, and the Sheets of Paper, being taken from betwixt the Felts, are laid one upon the other till the next Day, and then are hung

hung up, on Lines called *Trebbles*, in the *Drying-House*, in Par-Of drying the
cels of three, four, or five Sheets in each Parcel; they have no Paper.
certain Time of hanging, but in *Winter* they hang much longer
than in the *Summer*. As soon as the Sheets are dry, they are Time taken up
taken down again, and are *flatted* and laid in *Piles*, and then in drying or siz-
fixed, that is, they were wetted in *Size*; after that, when the ing.
Quantity of several Reams has been put one upon another,
they are pressed again, leaving a sufficient Quantity of *Size*
therein for the bearing of Ink, when wrote upon. After this, Dried a second
they are hung, and dry a *second Time* in Parcels of three or four Time.
Sheets at the most, and, when they are dry again, they are
taken down from the Lines and sorted, when the Sheets which
are broken and faulty are separated from the good, and both Of sorting.
counted into *Quires*. After this is done, they are pressed two
or three Times till made smooth, and then tied up into *Reams*
for *Bundle* for Sale. Note, That 18 of the good *Quires*, and 2
of the broken go to each *Ream*; and 36 of the good, and 4 of
the broken to each *Bundle*. N. B. *Brown* and *whitened-brown*
Paper are made after the same Method, but they are sooner
finished, because but once hung up to dry, before pressed,
and made up into Reams or Bundles for the Market.

Having described to the *Officer* the Manner of making Pa- What is a Ream,
per, I shall furnish him with three very useful Tables, and then and what a Bun-
conclude this Chapter with such *Cautions* and *Instructions*, as die of Paper.
are requisite to advance that Branch of the Revenue. Of brown and
white-brown
Paper.

Three very use-
ful Tables.

Quantity of Water, and kept to a certain Degree of Heat, about
four-warm, and this is the last Preparation for making Paper.
There are moulds to answer each size of Paper designed to be
made, and the bottom of each Mould is of Brass Wire, some-
what resembling a fine sieve; and these Moulds are dipped into
the *vat*, and are to be handled by the Dexterity and Skill of the
Workman, that the Water runs thro' the Wires of the Mould,
and the bottom stays only remains behind therein; and then it
is gently turned out of the Mould, and laid on a Woolen Cloth,
said on the felt it ap-
pears as if the felt is laid upon
it, and so on
upon that felt, and so on
of eight Quires, which is
generally contains the same
intended to be made there.
Day: but he must take care
and they be marked off Folds in a Day, which makes the
same Quantity. The fold being put into a Press and pressed
very hard together, till the Water is squeezed out; it is not
suffered to continue in the Press, but it is immediately taken out
again, and the sheets of Paper, being taken from between the
folds, are laid one upon the other till the next Day, and then are
hung



The First TABLE.

A Table of the Names and Dimensions of those Sorts of Papers, that are usually made in England, and also the Quantity of each Sort that is commonly reckoned a Day's Work; which Duty, which is liable to Duty, is taken from the Report of the Honorable Commissioners of Excise.

NAMES of Paper.	Dimensions of each Sheet.	How many Reams of each Sort usually made in a Day.
BROWN PAPERS.		
Large Cap, called <i>Bagg Cap</i>	23 $\frac{1}{2}$ by 19	6
<i>Kentish</i> Cap	21 $\frac{1}{2}$ by 18	6 $\frac{1}{2}$
Western Cap	20 $\frac{1}{2}$ by 17 $\frac{1}{2}$	7
Small Ordinary	18 by 15	7 $\frac{1}{2}$
Ditto 2 Pounds	22 by 14	7
Ditto 1 Pound Double	18 by 11	7
Ditto $\frac{1}{2}$ Pound double	19 $\frac{1}{2}$ by 15 $\frac{1}{2}$	7 $\frac{1}{2}$
WHITED BROWN.		
Called <i>Lomb. Hand</i>	21 by 17	6 $\frac{1}{2}$
Royal	24 by 19	6 $\frac{1}{2}$
Middle French	21 by 17 $\frac{1}{2}$	6 $\frac{1}{2}$
Small French	19 $\frac{1}{2}$ by 16	7
Middle Hand	20 by 16	7
Small Hand	18 by 14 $\frac{1}{2}$	8
Cut Hand	23 by 15	7
PRINTING SUPER ROYAL.		
Printing Royal	23 $\frac{1}{2}$ by 18 $\frac{1}{2}$	5
Royal Blue	23 $\frac{1}{2}$ by 18 $\frac{1}{2}$	5
Cartridge Paper	23 $\frac{1}{2}$ by 18 $\frac{1}{2}$	5
Printing Demy	19 $\frac{3}{4}$ by 15 $\frac{3}{4}$	7
Writing Demy	19 by 15 $\frac{1}{4}$	7
Demy Blue	19 $\frac{3}{4}$ by 15 $\frac{3}{4}$	7
Large Post	19 by 14 $\frac{3}{4}$	7
Crown	18 $\frac{1}{4}$ by 14 $\frac{1}{2}$	8
Printing Fools Cap	17 $\frac{1}{2}$ by 13 $\frac{1}{2}$	8
Writing Fools Cap	16 by 13	8
Fan Paper large	22 $\frac{1}{2}$ by 14 $\frac{1}{2}$	7
Fan Paper small	18 $\frac{1}{2}$ by 14 $\frac{1}{2}$	8
Chancery double	22 by 14 $\frac{1}{2}$	7
Bastard or Double Copy	19 by 14 $\frac{1}{2}$	7
Pot	15 $\frac{1}{2}$ by 12 $\frac{1}{2}$	8

In some Mills they make nine Reams in a Day.

In some Mills 9 in a Day.

N. B. Notwithstanding the Length and Breadth of Paper are not exactly the same in every Mill, yet the Difference is so very little, that they may be easily known from other Sorts.

The Second TABLE.

Of the *Namts* and *Rates* (as set forth in the Acts of Parliament) of the several Sorts of Papers which are made in Great-Britain, liable to Duty; which Duty is under the Management of the Honourable Commissioners of Excise.

How many Reams of each Sort usually made		Duty on each Sort usually made		NAMES of Paper	
Demy Fine	—	2	3	Large Cap, called Bass Cap	—
Demy second	—	1	6	Large Cap	—
Crown Fine	—	1	6	Western Cap	—
Crown second	—	1	1	Small Ordinary	—
Fools Cap Fine	—	1	6	Two 2 Pound	—
Fools Cap second	—	1	1	Two 1 Pound Double	—
Fine Pot	—	1	6	Two 1 Pound double	—
Second Pot	—	1	6	White & Brown	—
Brown large Cap	—	1	6	Called Lamb Hand	—
Small ordinary Brown	—	1	6	Royal	—
Whited brown	—	1	6	Middle French	—
Paste-boards, Mill boards, and Scale-boards	—	4	6	Small French	—
Printed, Painted, or Stained Paper for Hangings	—	1	1	Middle Hand	—

ALL OTHER Papers, White or Brown, or of any other Colour or Kind, pay a Duty of 18l. per Cent, ad Valorem.

In some Mills they make nine Reams in a Day.



In some Mills 9 in a Day.

M. B. Notwithstanding the Care and Brandy of Paper are not exactly the same in every Mill, yet the Difference is so very little, that they may be easily known from other Sorts.

The Third Table. The Officer must be in the Town where he resides at least once a Day, and in his Ride as often as convenient with the Surveyor of his Riding, and the Security of the other Branches of the Revenue. The Officer, upon each Survey, must enter into the proper Map enter the Column the Containing the Value being The Duty is

A New TABLE for the Excise on Paper at 18 1/2 per Cent. ad Valorem.

Value being.	The Duty is	Value being.	The Duty is	Value being.	The Duty is	Value being.	The Duty is
s. d. s. d. s. d. s. d. s. d. s. d. s. d. s. d.							
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 3	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 4	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 5	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 6	0 0	0 0	0 0	0 0	0 0	0 0	0 0
0 7	0 1	0 0	0 0	0 0	0 0	0 0	0 0
0 8	0 1	0 0	0 0	0 0	0 0	0 0	0 0
0 9	0 1	0 0	0 0	0 0	0 0	0 0	0 0
0 10	0 1	0 0	0 0	0 0	0 0	0 0	0 0
0 11	0 1	0 0	0 0	0 0	0 0	0 0	0 0
1 0	0 2	0 0	0 0	0 0	0 0	0 0	0 0
2 0	0 4	0 1	0 0	0 0	0 0	0 0	0 0
3 0	0 6	0 1	0 0	0 0	0 0	0 0	0 0
4 0	0 8	0 2	0 0	0 0	0 0	0 0	0 0
5 0	0 10	0 3	0 0	0 0	0 0	0 0	0 0
6 0	1 0	0 3	0 0	0 0	0 0	0 0	0 0
7 0	1 3	0 4	0 0	0 0	0 0	0 0	0 0
8 0	1 5	0 5	0 0	0 0	0 0	0 0	0 0
9 0	1 7	0 6	0 0	0 0	0 0	0 0	0 0
10 0	1 9	0 7	0 0	0 0	0 0	0 0	0 0
11 0	2 1	0 8	0 0	0 0	0 0	0 0	0 0
12 0	2 3	0 9	0 0	0 0	0 0	0 0	0 0
13 0	2 4	0 9	0 0	0 0	0 0	0 0	0 0
14 0	2 6	0 9	0 0	0 0	0 0	0 0	0 0
15 0	2 8	1 0	0 0	0 0	0 0	0 0	0 0
16 0	2 10	1 1	0 0	0 0	0 0	0 0	0 0
17 0	3 0	1 2	0 0	0 0	0 0	0 0	0 0
18 0	3 2	1 3	0 0	0 0	0 0	0 0	0 0
19 0	3 5	1 4	0 0	0 0	0 0	0 0	0 0

for the more effectual Discovery of such Impostion, as well as Fines

Directions

Directions for the Officers.

THE Officer must be careful to survey the Paper-Makers in the Town where he resides at least once a Day, and in his Ride, as often as is consistent with the Nature of his Business, and the Security of the other Branches of the Revenue he has the Care of.

The Officer, upon each Survey, must enter into the proper Column the Condition of the Mill: viz. Whether at work, or silent; and likewise the several Sorts of Paper, which is going forwards, in the proper Fat Column. and likewise the Condition of the Dry-Press; and, from Time to Time, he must enter the Number of Reams therein in one Total, though they be of different Kinds of Paper; and, as soon as any Part thereof is finished, he must make a Charge thereon, entering the same in the proper Column against the Day of the Month on which it was charged; and, at the same Time, he should examine some of the Reams and Bundles of each Sort, to discover whether he is not imposed upon in the Tale of Quires or Sheets.

Upon each Survey the Officer makes, he must go through the several entered Drying-Rooms, and other Places of the Mill, Sorting-houses, and Ware-houses, and compare the Bulk of the Bales with what they were upon his former Survey; and he must make any other Observations from the folding, or by some other Mark or Writing upon the Outside of the Bundles or Reams; (if the Paper-Makers will permit it) as may enable him to discover any foul Practice, distinguishing the Paper, which has been charged, from what has not been charged.

Discoveries have frequently been made, that some Paper-Makers have made ordinary Paper for Printing in a Demij or a Crown Mould, and call it *Whited-brown*, and unskilful Officers have charged it as such; when, in fact, it ought to have been charged *ad Valorem*. For the preventing which the Officer must observe, that *Whited-brown* Paper is never sized, but all ordinary Paper made for Printing is sized much or little, to make it bear the Ink. Such Paper-Makers have sometimes given to ordinary *Whited-brown* other Names, or perhaps cut them, and made what they call *white-Pound* or *white-Half-Pound* of them, in order to be charged *ad Valorem*. They have likewise cut small ordinary *Brown*, and called it *Brown-Pound*, or *Half-Pound*; nay, sometimes *Two-Pounds*, in order to its being charged *ad Valorem*. But, to prevent such vile Practices, the Officers must be careful to observe, that small ordinary *Brown* (as well as *Brown large Cap*) is made of *old Ropes*, or *Cordage*, and is a strong Paper; whereas *Pound*, *Half-Pound*, or *Two-Pound* Paper, is made of Part *Cordage* and Part *Wooden Rags*, or such other Offal as happens amongst the Rags; and is generally thinner, and more uneven, and always more weak and rotten, than small ordinary *Brown*, or *Brown large Cap*. And for the more effectual Discovery of such Imposition, as well as

Frauds

Frauds in valuing of *unrated* Paper, the Officer must request the Maker, or Owner, to give him Leave to take (for a *Sample*) a *Sheet* or *half Sheet* of each Sort of Paper he charges, (which no fair Dealer will refuse) and write upon it the *Maker's Name*, when charged, the *Quantity*, the *Quality*, and the *Value* (if it be *unrated*) and he must carry the same to the *Sitting* to be viewed and examined by the *Collector* and *Supervisor*, and compared with the *Samples* of Paper charged at *other Mills*.

Must keep a Specimen-Paper.

The Officer is to keep a Specimen-Paper in each Paper-Maker's finishing Room, and every Survey must make a proper Entry thereon.

Must be careful they make Entries.

The Officer is to see that every Paper-maker makes such an Entry of the Places of Making, Drying, &c. as the Law requires, which must be kept on a File by the Office-keeper, and copied by the Officer into his *general Entry-Book*. N.B. The Officer must observe, and punctually comply with such other Injunctions or Restrictions as are contained in the *Excise, Malt, or other Instructions*, so far as the same may be applicable to this Duty, and as if the same were here at large repeated.

CHAPTER XV.

Concerning the Duty and Business of those Officers of Excise, who survey Hops, so as to prevent the Planters from evading the Duty, or defrauding the Revenue.

THE Officer must enter, in the Beginning of his Book and Journal, an exact Scheme of his Division, and at the End of the Journal must be entered all the Planters Names, and Places of Abode, in the Order they are to be surveyed, and, as soon as each Planter has made his Entry, the Officer is frequently to survey his Hop-Ground, till he begins to pick; and also, during the Season, if it prevents not more necessary Business. The Officer, at the End of the Season, should also see the Grounds, and be satisfied that the Picking is over, entering, at all such Times, in the proper Columns of the Ledger, in what Condition he finds the Grounds, whether picking, silent, or all picked, &c.

Must Copy all Entries.

The Officer must copy all Entries of the Hop-Planters into a Book kept at the Excise-Office for that Purpose, and attested by the Office-keeper, within five Days after the Entries are sent or given in, on Pain of forfeiting the Sum of 400. for every Neglect. And the Office-keeper must be informed, that, as soon as he receives any Entry, he must write upon it the Time he receives it, and then put it upon a general File; and to this File all the Officers and their Assistants, must have frequent

Resort

Resort to take from thence the Entries that belong to each of their Divisions, and to copy the same as before directed; and to enter the Particulars, in a Scheme for that Purpose, against each Planter's Name, at the Head of the Page in the Ledger; and then the Entries must be put upon separate Files belonging to each Division and Assistant, writing upon each Entry, as they file them, the Number progressively to answer the Index of the Entry-Book; and, at the same Time, to enter in the said Index the Planter's Name, Date of his Entry, Time of its being received at the Office, the progressive Number of the Entry, Page where, and Time when copied, and the two initial Letters of his Name that copies it. The Entries, that are delivered to the Officers, must be managed after the same Manner. THE Officer is to observe, that he is to survey every Planter once a Day, from the Time of Entry until they begin to pick; after which he must survey them, when Notice for bagging, casking, or weighing is depending twice a Day, or oftener, until they have finished bagging, casking, and weighing, if the Business of his Division and the other Branches of the Revenue under his Care will permit; but, if the Officer's Ride is so large that he cannot survey the Planters as aforesaid, he must not fail to survey them as close as possibly he can, having a due Regard to where most Business is going forwards. If an Officer has but one or two Assistants, the Supervisor is to see that such Officer once a Week changes Books with the Assistants, and surveys their Divisions, provided those Assistants have been instructed in the Excise, and are capable of performing the Officer's Business in his Absence; and the Officer must also frequently inspect the Books of his Assistants, and inform them where he finds them deficient; and, where the Revenue seems to be most in Danger, he must, as often as he can, make Surveys there. THE Officer must acquaint all his Planters, or Owners of Hops, that the Law obliges each of them to give or send Notice, in Writing under their Hands, to the next Excise-Office, or to the proper Officer of the Division, of the Day, and precise Hour of such a Day in which they intend to begin to bag, cask, or weigh any Part of their Hops; and such Notice for bagging, casking, or weighing, in the first Week of bagging, &c. or weighing, must be given or sent at least twenty-four Hours before-hand; and, after the first Week, forty-eight Hours before such bagging and weighing shall begin: And if, after such Notice given, they do not proceed to bag, &c. and weigh, pursuant to their respective Notice, they must, before they shall at any other Time begin to bag, &c. or weigh any Part or Parts thereof, give or send a fresh Notice, under the Penalty of fifty Pounds: and if any Owner, or Planter, shall neglect or refuse to comply as aforesaid, in giving or sending Notice, the Officer must acquaint the Collector or Supervisor with it, as soon as he has an Opportunity. The Officer, when he has such Notice given him, when he is upon his Survey, must en-

When to change Books with the Assistants.

Must acquaint the Planters that they give a written Notice to weigh.

Within what Time.

If delay'd, must give a fresh Notice, or forfeit.

all the Officers and their Assistants must have frequent Resort

Of Planters who
dry for others,
and of Owners
that have no
Oust.

Must enquire
after Notices for
Bagging, &c.

Must be careful
the Scales and
Weights are just.

How the Bags
are to be en-
tered, number-
ed, and marked.

When Hops are
to be casked.

ter it in his *Ledger*, and remark it at the End of the said Book.

N. B. If any Planter dries for other Persons, such Planter, when he gives Notice to bag or weigh any Hops that are not his own; must be required to mention in such Notice the *Owner's Name*; or if the *Owner*, who has no Oust of his own, gives the Notice himself, he is to mention in it *at whose Oust* the same are to be bagged or weighed. THE Officer must take all Opportunities of enquiring, where the Journal is kept, whether any Notice for bagging, casking, or weighing has been left; and, when he finds any that relates to his Division, he must immediately enter properly the Date of it, and the Time he found it, in his *Ledger*, at the End of his last Survey, the Columns for Notices being to be left open for that Purpose, until he makes the next Survey; at which Time he must not fail to dash or dot thro' those that have not been filled with a Notice since the former Survey; and if Notice of bagging, casking, or weighing, is at any Time given, and the bagging, casking, and weighing afterwards deferred, the Officer must insist on fresh Notice, and enter the same in his *Ledger*, and cancel the former Notice.

The Officer, when he weighs, must take great Care that the Scales are truly balanced, and that the Weights are just; and he must frequently change the Ends, and put the Weights sometimes in one Scale, and sometimes into the other Scale, that he is not imposed upon by a false Beam; and he must not, on any Pretence, use Stones, &c. for Weights, because the Law obliges all Planters to provide just Weights and Scales*; and when the Officer is obliged to weigh by Stilliards, he must try them by some known Weight, if he can easily procure one, or not fail to use such other Cautions as are necessary to prevent an Imposition, and always be very punctual in weighing each Bag or Cask; because no Custom of a Country is to be any Plea for allowing a Pound or two at each Draught. AFTER any Pocket or Bag is weighed, and the *Tare* deducted, *which is one Pound in every Ten Pounds*; (and, for the more ready deducting it, I have furnished a Table at the Close of this Chapter;) he must enter the *Number* of the Pocket or Bag, and also its *gross* and *net* Weights in his *Ledger*, and then he must mark the *Number* *net Weight*, and *Year of our Lord* upon each Pocket or Bag, and with his Brush he must make some black Strokes *cross the Sewing*, at the Top of the Bag, and at the Bottom, (if sewed there;) so that if the Bag should be opened, and more Hops put into it, the Fraud may appear by the Separation of those black Strokes; and before the Officer leaves the Place of Weighing, he must not fail to *add up* the Pockets or Bags, and the *gross* and *net Weight*, in his Book; transferring the *Total* of the Pockets or Bags, and *intended to be casked*, the *Casks* must be carefully weighed; and the *Tare* marked fairly thereon with Ink; and, when each Cask of Hops is weighed, the *Tare* of the Cask must be deducted, and the

* See Page 217.

the *net* Weight of the Hops, together with the *Number* of the Casks, must be marked (*progressively*) thereon, just in the same manner as is done by *Pockets* and *Bags*. THE Officer, at whose *Office* Planters who make use of their own *Ousts*, must leave a *Minute-Paper* in the *Oust-House* of all such Planters, on which he must enter the *Time* of his Survey, &c. and, before the Officer leaves his *Division*, he must deliver to those Planters whose Hops are all weighed off, or their *Servant*, under his Hand in Writing, the whole *net* Weight of Hops, and the *Sum* of Money he is charged with, also the *Place* where, and *Time* when the said Duty is to be paid, that no Person concerned may have any *Pretext* to plead he is ignorant thereof. THE Officer should have Recourse to the *Books* for the *last Year*, and take from thence the *Name*, *Place* of *Abode*, *Quantities* of *Ground* and *Hops*, of every *By-Planter*, and enter these *Particulars* in his *Book*, together with their *progressive Numbers*; and this is only designed as a *Direction* for the *present Year*. And when he makes any *Discovery* upon them, by their *Entries* or otherwise, for the *present Year*, he must enter and survey them *separately*. THE Officer must enter the *Names* of the *By-Planters*, who pay their Duty to the Officer, and likewise the *Names* of those who have been surveyed as *By-Planters*, but will not pay their Duty to the Officer; and the Officer, upon receiving the Duty from any *By-Planter*, must immediately give him an *Acquittance* for the same, which must express the *net* Weight of Hops, the *Sum* of Money, and *Time* when charged therewith; and, at the next *Sitting*, the Officer must pay all the Money that he has received for *By-Hops* to the *Collector*, and enter the *Particulars* in a *Book* (he is to keep for that Purpose,) and sign his *Name* thereto. But he must not, at his Peril, offer to enter any Person in the *Scheme* for *By-Hops*, who enters an *Oust* of his own; nor any one whose Duty amounts to *twenty Shillings*; nor must he presume on any *Pretext* whatsoever, to receive the Duty, if the whole Charge be not less than *twenty Shillings*; this, as in all other Branches of the *Excise*, the Officer must never enter any *feigned Survey*, or *false Minute*, nor must he scratch or Alter any *Word* or *Figure* in his *Ledger*, *Minute-Papers*, or *Journal*, on Pain of the utmost Displeasure of the Board; but, if he shall happen to make any *Mistake*, he must only draw a *small Line* through it with his Pen, that it may remain legible, and clear the *Mistake*, by writing a *Memorandum* against it. WHERE the Officer is employed in such a *Division* as is only for the Hop-season, he must hasten the Planters to weigh off as soon as conveniently they can; and, as soon as the most considerable have weighed off, he must acquaint the Supervisor therewith; and if the Supervisor thinks one of the neighbouring Officers may look after those Planters that have not finished, and shall give *Directions* accordingly, the Officer is forthwith to deliver his *Books* and *Papers*, and what Money has been paid him for *By-Hops*, since the former *Sitting*, to

When to carry
his Commission.

A necessary Ob-
servation.

the succeeding Officer, and take his Receipt for the same; and, upon his repairing to the Collector, he will pay him his Salary to that very Day inclusive, upon which he delivered his Books to the succeeding Officer. THE Officer must always carry his *Commission* with him when upon his Survey, and must readily shew it to those concerned, who shall demand a Sight thereof; and he must take care his Behaviour be *civil*, and that he avoids giving any just Occasion of Complaint. THE Officer must observe, that those Hops which belong to Planters, who have no Out of their own, must be weighed *at the Place where they are dried and bagged*, but the Draughts must be entered in the Page belonging to the Person to whom they are charged.

The Use of the following TABLES.

C. Qr. lb.

Question. In 18 : 3 : 20 of Bag-Hops, I demand
First, How many Pounds-gross?
Secondly, How many Pounds-net? And,
Thirdly, How much the Excise amounts to at 1d per Pound?

First: For the Pounds-gross by TABLE I.

C. Qr. lb.

18 : 0 : 0 is 2016

0 : 3 : 20 is 0104

Answer 2120 Pounds-gross.

Secondly: For the Pounds-net by TABLE I.

2016 lb. gross is 1814.4

104 ——— is 93.6

Gross lb. 2120 *Answer* 1908. Pounds-net.

Thirdly: For the Amount of the Excise by TABLE II.

l. s. d.

1000 lb. — is — 4 : 3 : 4

900 ——— is — 3 : 15 : 0

8 ——— is — 0 : 0 : 8

1908 lb. ——— 1. 7 : 19 : 0 is the Amount of the Excise.

When (in either of the Tables) you cannot find the Number you want at once, you must take it out at several Times, as in the above Examples.

N. B. If you want to turn Pounds-net into Pounds-gross, or into Hundreds, Quarters, and Pounds; find the Pounds-net (in Table I.) and, in the next Column to the Left Hand, you have the Pounds-gross; and next to that the Hundreds, Quarters, and Pounds, which are equal to it.

TABLE

TABLE I.

An Easy and Useful Table for reducing *Hundreds, Quarters, and Pounds* into *Pounds Gross*; and *Pounds Gross* into *Pounds Net*; the *Allowance* for the *Bag or Tare*, which is 1 lb. in 10 lb. being deducted.

Hundr.	Quart.	Pounds	Gross Weight in Pds.	Net Weight in Pounds and 10ths.	Hundr.	Quart.	Pounds	Gross Weight in Pds.	Net Weight in Pounds and 10ths.	Hundr.	Quart.	Pounds	Gross Weight in Pds.	Net Weight in Pounds and 10ths.
		lb.		lb. 10ths.			lb.		lb. 10ths.			lb.		lb. 10ths.
0	0	1	1	0 9	0	1	20	48	43 2	0	3	11	95	85 5
0	0	2	2	1 8	0	1	21	49	44 1	0	3	12	96	86 4
0	0	3	3	2 7	0	1	22	50	45 0	0	3	13	97	87 3
0	0	4	4	3 6	0	1	23	51	45 9	0	3	14	98	88 2
0	0	5	5	4 5	0	1	24	52	46 8	0	3	15	99	89 1
0	0	6	6	5 4	0	1	25	53	47 7	0	3	16	100	90 0
0	0	7	7	6 3	0	1	26	54	48 6	0	3	17	101	90 9
0	0	8	8	7 2	0	1	27	55	49 5	0	3	18	102	91 8
0	0	9	9	8 1	0	2	0	56	50 4	0	3	19	103	92 7
0	0	10	10	9 0	0	2	1	57	51 3	0	3	20	104	93 6
0	0	11	11	9 9	0	2	2	58	52 2	0	3	21	105	94 5
0	0	12	12	10 8	0	2	3	59	53 1	0	3	22	106	95 4
0	0	13	13	11 7	0	2	4	60	54 0	0	3	23	107	96 3
0	0	14	14	12 6	0	2	5	61	54 9	0	3	24	108	97 2
0	0	15	15	13 5	0	2	6	62	55 8	0	3	25	109	98 1
0	0	16	16	14 4	0	2	7	63	56 7	0	3	26	110	99 0
0	0	17	17	15 3	0	2	8	64	57 6	0	3	27	111	99 9
0	0	18	18	16 2	0	2	9	65	58 5	1	0	0	112	100 8
0	0	19	19	17 1	0	2	10	66	59 4	2	0	0	224	201 6
0	0	20	20	18 0	0	2	11	67	60 3	3	0	0	336	302 4
0	0	21	21	18 9	0	2	12	68	61 2	4	0	0	448	403 2
0	0	22	22	19 8	0	2	13	69	62 1	5	0	0	560	504 0
0	0	23	23	20 7	0	2	14	70	63 0	6	0	0	672	604 8
0	0	24	24	21 6	0	2	15	71	63 9	7	0	0	784	705 6
0	0	25	25	22 5	0	2	16	72	64 8	8	0	0	896	806 4
0	0	26	26	23 4	0	2	17	73	65 7	9	0	0	1008	907 2
0	0	27	27	24 3	0	2	18	74	66 6	10	0	0	1120	1008 0
0	1	0	28	25 2	0	2	19	75	67 5	11	0	0	1232	1108 8
0	1	1	29	26 1	0	2	20	76	68 4	12	0	0	1344	1209 6
0	1	2	30	27 0	0	2	21	77	69 3	13	0	0	1456	1310 4
0	1	3	31	27 9	0	2	22	78	70 2	14	0	0	1568	1411 2
0	1	4	32	28 8	0	2	23	79	71 1	15	0	0	1680	1512 0
0	1	5	33	29 7	0	2	24	80	72 0	16	0	0	1792	1612 8
0	1	6	34	30 6	0	2	25	81	72 9	17	0	0	1904	1713 6
0	1	7	35	31 5	0	2	26	82	73 8	18	0	0	2016	1814 4
0	1	8	36	32 4	0	2	27	83	74 7	19	0	0	2128	1915 2
0	1	9	37	33 3	0	3	0	84	75 6	20	0	0	2240	2016 0
0	1	10	38	34 2	0	3	1	85	76 5	30	0	0	3360	3024 0
0	1	11	39	35 1	0	3	2	86	77 4	40	0	0	4480	4032 0
0	1	12	40	36 0	0	3	3	87	78 3	50	0	0	5600	5040 0
0	1	13	41	36 9	0	3	4	88	79 2	60	0	0	6720	6048 0
0	1	14	42	37 8	0	3	5	89	80 1	70	0	0	7840	7056 0
0	1	15	43	38 7	0	3	6	90	81 0	80	0	0	8960	8064 0
0	1	16	44	39 6	0	3	7	91	81 9	90	0	0	10080	9072 0
0	1	17	45	40 5	0	3	8	92	82 8	100	0	0	11200	10080 0
0	1	18	46	41 4	0	3	9	93	83 7	200	0	0	22400	20160 0
0	1	19	47	42 3	0	3	10	94	84 6					

TABLE II.

A New Cash-Table for the Duty on Hops, at a Penny per Pound.

The Weight in Pds being	The Duty is			The Weight in Pds being	The Duty is			The Weight in Pds being	The Duty is		
	l.	s.	d.		l.	s.	d.		l.	s.	d.
1	0	0	1	120	0	10	0	410	1	14	2
2	0	0	2	130	0	10	10	420	1	15	C
3	0	0	3	140	0	11	8	430	1	15	10
4	0	0	4	150	0	12	6	440	1	16	8
5	0	0	5	160	0	13	4	450	1	17	6
6	0	0	6	170	0	14	2	460	1	18	4
7	0	0	7	180	0	15	0	470	1	19	2
8	0	0	8	190	0	15	10	480	2	0	C
9	0	0	9	200	0	16	8	490	2	0	C
10	0	0	10	210	0	17	6	500	2	1	8
11	0	0	11	220	0	18	4	600	2	10	0
12	0	1	0	230	0	19	2	700	2	18	4
13	0	1	1	240	1	0	0	800	3	6	8
14	0	1	2	250	1	0	10	900	3	15	0
15	0	1	3	260	1	1	8	1000	4	3	4
16	0	1	4	270	1	2	6	2000	8	6	8
17	0	1	5	280	1	3	4	3000	12	10	0
18	0	1	6	290	1	4	2	4000	16	13	4
19	0	1	7	300	1	5	C	5000	20	16	8
20	0	1	8	310	1	5	10	10000	41	13	4
30	0	2	6	320	1	6	8	20000	83	6	8
40	0	3	4	330	1	7	6	30000	125	0	0
50	0	4	2	340	1	8	4	40000	166	13	4
60	0	5	0	350	1	9	2	50000	208	6	8
70	0	5	10	360	1	10	0	60000	250	0	0
80	0	6	8	370	1	10	10	70000	291	13	4
90	0	7	6	380	1	11	8	80000	333	6	8
100	0	8	4	390	1	12	6	90000	375	0	0
110	0	9	2	400	1	13	4	100000	416	13	4

CHAP.

C H A P. XVI.

Concerning the Duty and Business of those Officers of Excise, who survey Dealers in Coffee, Tea, and Chocolate, so as to prevent them from Evading the Duty, and Defrauding the Revenue.

THE Officer is to number all the large Canisters, Bags, Boxes, Tubs, and assign a Column in his Book for each, and enter at the Top the Numbers, Depths, and the Contents in Pounds net; he must enter the Diameters of the round Canisters, Bags, Tubs, and Casks, and also the Sides of the square or oblong Canisters and Chests; the Number of other Canisters of smaller Size, *i. e.* Pounds or half Pounds, &c. may be stocked in Columns, titled proper for their Contents, and the Quantity in them, *per* Computation, may be entered in another Column, as will be taught you when you are under Instruction.

The Officer, when he finds any of the before-mentioned Vessels broke open, and any Part taken out, he must make the Surface of the Remainder even, and then take the Inches the Vessels want of being full, and insert them in his Book, by which he will be able afterwards to judge if any fraudulent Increase has been made; and if, from the Gauges he has taken, he has reason to suspect a Fraud at any Time, he is fully to satisfy himself by having the Stock weighed. (See Page 207.) Every Keeper of Coffee and Chocolate-houses, Maker of Chocolate, or Seller of Coffee, Tea, or Chocolate, are, every Night, to enter into Books, for that Purpose, the Totals of all the small Quantities, under six Pounds, which have each Day been respectively sold or consumed. And, where you suspect any Trader does not make true Entries, you are to employ some Person privately to buy so much Tea, &c. as will exceed the daily Quantity such Trader generally enters in his Book (the Tea, &c. to be brought to the general Office, and entered in a Book kept for that Purpose.) They must also enter, every Night, into other Books, every Parcel of Coffee, Tea, &c. that exceeds six Pounds Weight, which they respectively sell each Day, and for all such Quantities the proper Officer is to give Permits or Certificates; and, if the said Goods are found carrying without a Permit, they are to be seized. When a Permit has been granted for any considerable Quantity of Coffee, or Tea, to any Person, and the Officer has Reason to suspect, he is immediately to repair to such Persons, and take Stock there, in order to discover whether there be a *suitable* Decrease for the same. Or when he finds such suspected Permit taken out for Tea, &c. and apprehends the Goods will not be sent away with the Permit, if he by watching can prove the Goods are

Canisters, &c. must be numbered, &c.

Must have the Stock weighed, if he suspects a Fraud.

The Sellers to enter all less than 6lb. and all Parcels that exceed 6lb. in separate Books; and must have Permits for the same.

not sent out, nor Permit returned, he has detected such a Trader in a Penalty for *treble the Value* for such Tea, &c. and besides, that Dealer in Tea, &c. is under another Penalty for *false Entry* in his Book. The Officer is to stock at uncertain Times, but he must do it as often as other Business will permit, at which Time he must look thro' all the entered Rooms, and such other Places as may be convenient for carrying on a Fraud; and, if he receives any Information, or has any Cause to suspect that any Quantity of Coffee, Tea, &c. shall be hid fraudulently, or concealed in any other Place belonging to any Person whatsoever, he must make Oath thereof before one or more Justices of the Peace, according to the Act of Parliament for obtaining a Warrant to search and seize such Coffee, Tea, &c. as he finds hid or concealed. And the Officer, when he takes an Account of the Stock, must, from the Trader's Books before-mentioned, take an Account of what Goods have been sent out, and enter the same in Columns for that Purpose in his own Book; and this he must compare with his Stock, that he may be able to discover whether the Quantity sent out be answerable to the Decrease in Stock. And, as often as he does stock and examine the Dealer's Books, he must enter in them, instead of a Specimen-paper, the Time of his Survey, and the two first Letters of his Christian and Sir-name, close under the Date of the Dealer's last Entry; and the Officer, at the close of every 2d, 4th, 6th, and 9th Rounds must take up such Books from the Dealers, after either they, or their Servants who kept them, have made Oath, or Affirmation before the Collector or Supervisor, to the Truth of the Entry contained therein; and at the same Time they must have new Books delivered to them, and the old ones must be returned to the Office. The Officer, at the closing of every one of his Books, must be careful that, to the Quantities each Trader respectively had in Stock at the Beginning of such Books, he adds what they have respectively received in since, and from those Totals he must deduct what those Traders have sent out, and the Remainders are (or ought to be) the true Quantities in Stock, which Quantities he must enter against the transferred Stocks in the new Books.

The Officer is to observe that no Coffee, Tea, &c. must be exposed to Sale but in such places as are lawfully entered, nor brought into any such Warehouse, &c. without his first having Notice given him thereof, and a Certificate being produced that the Duty is paid, if the Quantity exceeds *six Pounds*; and he must immediately weigh such Goods, and deduct the Tare, and enter the net Weight in the Book, and the Permits or Certificates must be carefully kept on a File and sent to the Board, with the Books to which they belong. And, when the Officer finds an Increase of any Quantity that is less than six Pounds, he is to insist on Satisfaction that the Duty has been paid; and, if he has good Reason to believe that

Must stock at uncertain Times.

Of making Information.

Must compare the Stock.

Must sign to his Stocking of Dealers.

Dealers to be sworn to the Truth of their Entries.

Of closing the Books.

Must not be exposed to Sale, but in entered Places, nor brought there without a Permit, &c.

that it has not been paid, he may seize it, the Proof thereof being to lie upon the Person that owns or claims the same, or upon the Person who had the same found upon him.

And, as soon as possible after such Entries are made, the Officer must repair to (and require of) the Person, or his Servant who made the Entry, to shew every Warehouse, or other Place expressed in such Entry; and where he finds *Tea*, &c. in any unentered Place, he must seize the same; which, with the *Cask* or *Package*, is by Law forfeited, and a Penalty of 200*l.* for *Tea*, &c. When the Officer makes any Seizure of *Tea*, &c. he is to bring it as soon as possible to the Warehouse at the general Excise-Office, without any Embezzlement. *N. B.* That every Person whatsoever, keeping a Public-House, Shop, Cellar, or Warehouse, for selling of Brandy, Arrack, Rum, or Spirits, or strong Waters, and having in their Custody any *Coffee*, *Tea*, &c. exceeding 6*lb.* are to be deemed Dealers in the said Commodities.

Informations on a Seizure being always laid in the Officer's Name who makes such Seizure; when therefore he is necessitated to make a Seizure alone, and can have no Witnesses then See Page 226. to prove the Seizure, he must afterwards re-seize, or make a second Seizure of the same Goods, in the Presence of a sufficient Witness. In all Seizures, except where *Tea*, &c. is seized whilst carrying from Place to Place without a Permit, &c. it will be necessary to prove that the *Tea*, &c. seized, belongs to a Seller or Dealer therein.

☞ The Officer is to use his best Endeavours to discover any counterfeit or dyed *Tea*. For in the Year 1725, it was ordained, that *No Dealer in Tea, or Manufacturer or Dyer thereof, should counterfeit or adulterate Tea with Terra Japonica, or any Drugs, nor should mix with any Tea Leaves, other than Leaves of Tea, on Pain of forfeiting the Tea and also the Sum of 100*l.**

And in the Year 1731, it was further ordained, that *If any Dealer in Tea should dye or manufacture any Sloe-Leaves, Liquorice-Leaves, or the Leaves of Tea that have been used, or the Leaves of any other Plant in Imitation of Tea, or should mix, colour, or dye such Leaves or Tea with Terra Japonica, Sugar, Melasses, Clay, Logwood, or other Ingredients, or should sell or expose to Sale, or should have in his Custody, any such dyed or manufactured Leaves in Imitation of Tea, or any such coloured or dyed Leaves or Tea mixed with other Ingredients, such Persons should for every Pound of such Leaves or mixed Tea forfeit 10*l.**

The Officer must survey twice a Day, or oftener, all Chocolate-makers, when they are at Work, and enter in his Book, How Chocolate-makers are to be surveyed. at each Survey, the Condition of the House, *i. e.* if there be no Work in Hand, *silent*; but if they are at Work, he must enter the Number of Stones or Persons at Work; and he is to observe, that from each Stone he may reasonably expect twelve or fourteen Pounds of Chocolate a Day; and the Officer

Of the Cocoa-
Nut.

Chocolate-ma-
kers to be sworn
every six Weeks;
and the Goods
stamped.

must enter the Number of Pounds which have been filled into the Pans or Moulds, since he last surveyed, in a Column titled for that Purpose; and if he takes the Account right, those Columns will contain the whole Number of Pounds to be charged upon the Maker. The Officer is to be exceeding careful to take an Account of all the Cocoa-nuts brought in, and from whom; he must likewise take an Account of the Decrease in the Maker's own Stock of Nuts; and for this End it will be necessary to take the Stock every Day when they are at Work, and enter the Decrease in a Column for that Purpose, and that he may compare the whole Decrease with the Number of Pounds of Chocolate made; and, if he does not find eighty Pounds or upwards of Chocolate from one Hundred and Twelve Pounds of Nuts, he has great Reason to suspect the Maker does not work fair. Lastly, the Officer is to observe that all Chocolate-makers are, every six Weeks, to make an Entry in Writing, upon Oath, of the Weight of all the Chocolate they have made in such six Weeks; and they must produce all the Chocolate contained (or which ought to be contained) in such Entries, to the respective Officers, who are appointed to receive the said Entries; which Chocolate must be tied up, and a Stamp or a Mark affixed thereon by the Supervisor; or, if it be done by the Officer, it must be done when the Collector or Supervisor are present.

C H A P. XVII.

Shewing the Duty and Business of those Officers of Excise, who survey Printers of Silk, Linen, &c. so as to prevent them from evading the Duty, and defrauding the Revenue.

Printers, when
to be surveyed.

Officers must go
through all the
entered Rooms.
&c.

And take an Ac-
count of all Li-
nens, &c.

THE Officer employed in this Branch of the Revenue must survey the *Printers or others*, who are chargeable with these Duties, as often as his *other Business* will admit of it; and every Survey he makes, he must go through all the *entered Rooms*, and into such other Places which are not entered, that he apprehends may be convenient for *laying, preparing, working, drying, or keeping* any of the said Commodities.

The Officer must be careful to take an Account of all Linens, &c. that are brought in to be printed, &c. and, if possible, he must measure them also before they are printed, and he must write upon each Piece (at a Corner, or some other convenient Part, where it will be visible after Printing) the Number thereof, beginning with Numb. 1. upon the Commencement of every Book, and so must proceed progressively; likewise the Number of the Round; which Numbers he must enter,

enter, with their respective Length and Breadth, in the proper Columns in his Book; and, when he finds any Piece is printed, must measure and stamp the same, and insert its Dimensions in the proper Columns, comparing them with his former Account, and then mark off that former Account, with the Day of the Month each Piece was charged by him.

The Officer must carefully inspect the Tables, &c. when he finds the Printer at Work; and if he finds a Piece a printing, which has not been numbered and measured before, he must number it as *white Goods*, that, when it is finished, it may be measured and charged; and at the End of his Book he must be sure to set forth the Charges made each Day on the respective Printers.

Must inspect the Tables, &c. and be careful of his Stamp.

He must be very careful of his Stamp; and, when he does not carry it with him, he must keep it so locked up, that nobody but himself may come to it.

The Officer must keep at each Printer's a Specimen Paper, upon which he must enter the Time of his Survey; the Condition of the House, the Numbers of the *white*, and also the Numbers of the printed Goods he has measured that Survey; and when he makes a Charge, he must remark it at the End of his Book immediately, that it may be posted into the Journal.

Of the Specimen Paper.

The Officer must observe, that all the travelling or job Printers, who print, &c. at any other Place than that of their usual Residence, or Exercise of their Trade, must, before they print, &c. any Linen, &c. make an exact, particular Entry of the Goods they intend to print, and pay the Money down for the Duty of the same, under a Penalty of 50*l.* and Forfeiture of the Goods so intended to be printed.

Of Travelling Printers.

Now, in order to render the Measuring in these Duties as *con- cise and practicable* as possible, the Officer must provide himself with a *Rule* exactly a Yard long; which must be divided into *ten equal Parts*, and those again divided into *ten other equal Parts*, will make the whole Yard to be equally divided into 100 *equal Parts*; with which Yard he must take his *Lengths and Breadths*, and enter them in Yards and Parts of Yards. For Instance, if a Piece be 18 Yards and $\frac{1}{2}$ long, and $\frac{3}{4}$ of a Yard *broad*, the Length by the Rule will be 18.5, the Breadth .75, which being multiplied, the Length by the Breadth, the Product will be the Content in Yards square, and Parts. But by the *Sliding Rule* it is much readier, for setting the Length 18 5 on B, to Unity on A, against the Breadth .75 on A, you have 13.875 the Content on B.

Yard for measuring to be divided into 100 equal Parts.

Of Length and Breadth, an Example.

The Use of the Sliding Rule in casting up the Contents.

The Officer is to observe that *all Callicoes* between 31 Inches and a half, and not exceeding 40 Inches and a half *broad*, are to be reckoned as *Yard broad*; but *all other Callicoes* of a greater or lesser Breadth, and *all Linens and Silk-Handkerchiefs*, are to be reckoned and accounted for by the *Yard Square*; and, in *all other Silks*, he is to reckon the *Yard Square*, for *two Yards*, and so in Proportion.

C H A P. XVIII.

Concerning Glass-makers, &c. and of the Duty, and the Business of those Officers who survey them, so as to prevent them from evading the Duty, and defrauding the Revenue.

Of the Duty upon GLASS.

The Duty on
imported Glass,
&c.

IN the Year One Thousand Seven Hundred and Forty-Five, it was ordained, that after the 25th of March 1746, all Glass, Bottles and Flasks, IMPORTED into Great Britain, should pay the following Duties: viz. All Crown, Plate, and Flint Glass, 8d. for every Pound Weight; all Green or other Glass, 2d. for every Pound Weight; all Bottles and Flasks, containing a Quart, 2s. per Dozen; and all Bottles and Flasks containing more or less than a Quart, 2s. for every dozen Quarts, be the Quantity of Bottles, containing the same, greater or lesser; To be paid by the Importer.

The Duty on
British-made
Glass.

And all Materials, or Metal, or other Preparations whatsoever, which are or shall be made use of in making of all Crown, Plate, and Flint Glass, and white Glass, and of common Bottles, and all other Green Glass, are to pay the following Duties, viz. All the Materials for making Crown, Plate, Flint, and white Glass, 9s. 4d. for every Hundred Weight: And all the Materials for making common Bottles and all other Green Glass, 2s. 4d. for every Hundred Weight, and after these Rates for a greater or lesser Quantity: To be paid by the Maker.

Imported Glass
when forfeited.

And in Case any Glass, Bottles, or Flasks, IMPORTED, shall be landed or put on Shore, before due Entry and the Duties paid, or secured; and a Warrant signed by the proper Officer; they shall be forfeited, or the Value thereof, one Half to the King, and one Half to such Person as shall seize, inform, or sue for the same in any of the Courts of Record at Westminster, or in the Exchequer in Scotland, by Action of Debt, Bill, Complaint or Information, wherein no Essoin, Protection, or Wager at Law to be allowed. AND these Duties upon IMPORTED Glass are to be raised, levied, collected, and paid, in the same manner, and by such Ways, Rules, and Means, and under such Penalties and Forfeitures, as the present Duties on IMPORTED Manufactures of Glass are by an Act passed the 2d of William and Mary: And these Duties on IMPORTED Glass are to be under the Commissioners of the Customs of England and Scotland respectively.

The Duty is
collectable.

The Monies
where to be
paid.

And all the Money arising by these Duties (the necessary Charges of raising and accounting for the same excepted) shall from Time to Time be paid into His Majesty's Exchequer at Westminster, distinctly and apart from all other Branches of the public Revenues: AND for the better ascertaining and securing

curing the several Duties upon all Materials used in making Glass in *England, Wales, or the Town of Berwick upon Tweed*, the Duties are to be under the Management of the Commissioners of the Excise in *England* for the Time being: And Duties upon all Materials used in making Glass in *Scotland*, are to be under the Management of the Commissioners of the Excise in *Scotland*. And all Monies arising by the said Duties shall be paid into His Majesty's Exchequer at *Westminster*, distinctly and apart from all other Branches of the public Revenue.

The Duties on
British-made
Glass where to
be paid.

All Makers of Glass, on or before the 25th of March 1746, were to make an Entry in Writing at the next Excise Office, of his Name and of all his other Furnaces, Pots, Pot-Chambers, Warehouses, Rooms and other Places, for the making or keeping of Glass; or of Materials mixt and prepared for Making of Glass; and not to use any Pot or Pots for preparing or making of Glass, without first giving Notice to the proper Officer, that he may weigh, gauge, or take an Account of the same, on the Penalty of 50*l.* for every Offence, Half to the King, and Half to the Informer.

Glass-makers to
make Entry,

Every Glass-maker is to give the proper Officer Notice in Writing 12 Hours next before he begins to fill or charge any Pot or Pots, setting forth the true Weight of the Metal made use of, and the Species of Glass so to be made, on Penalty of 50*l.* for every Offence.

To give Notice,
or forfeit 50*l.*

But it is provided, that, if an intended Filling or Charging is not begun, the Notice given is to be null and void, and a new Notice must be given under the like Penalty and Forfeiture, as if no Notice at all had been given.

A fresh Notice,
or forfeit 50*l.*

AND the Officers must at all Times, by Day or by Night, be permitted (upon Request) to enter the Workhouse, Warehouse, or other Place for making or preparing of Glass, belonging to or used by any Person, who, on or after the 25th of March 1746, shall be a Maker of any Glass whatsoever; and to weigh or otherwise take an Account of the just Quantity of the Metal and Materials mixt and prepared for the Making of Glass, before the same is put into the Pot or Pots; and to examine, gauge, or otherwise take an Account of the just Quantity of the Metal and Materials mixed and prepared for the Making of Glass, after the same have been put into such Pot or Pots, and shall thereof respectively make a Return or Report in Writing, to the respective Commissioners of Great Britain, or such as they shall respectively appoint to receive the same; leaving a true Copy (if demanded) in Writing under his Hand, with or for such Makers of Glass respectively, and such Return or Report of the said Officer or Officers, whether made from the Weight of the Metal and Materials so mixed and prepared before the same be put into the Pot or Pots, or from the Account so taken in the Pots, shall be a Charge upon such Maker or Makers of Glass. And if the

Officers must
have Admittance at all
Times.

Must make a
Report in Writing
to the Commissioners,
and leave the
Maker a Copy.

Officer

Officer or Officers refuse or neglect to give or leave a true Copy of his Report in Writing, with or for such Maker or Makers of Glass, at the Time of taking such Account, on Demand, as aforesaid such Officer or Officers shall forfeit and pay to such Maker or Makers of Glass 40s. for every such Offence.

Officers must be sworn.

But every Officer who shall be empowered to make such Charge as aforesaid, must, in the first Place, be sworn for the due and faithful Execution of his Office; and the Oath in that Behalf shall and may be administered by *all* or *any* of the Commissioners of Excise in Great-Britain, or by any of His Majesty's Justices of the Peace, who shall give such Officer a Certificate thereof.

Makers to keep Scales and Weights, and to assist, or forfeit 50l.

And all and every such Maker or Makers of Glass, respectively, are required to keep sufficient and just Scales and Weights, at the Place or Places where he, she, or they, do make such Glass; and to permit and assist the Officer to make use thereof, for the Purposes hereby appointed, under the Penalty of 50l. to be forfeited and lost for not keeping such Scales and Weights, or for not permitting and assisting the Officer to use the same as aforesaid.

Of Pots breaking. See Page 393.

And in every Case where the Whole or any Part of the Materials shall be lost, or become unfit for making Glass, by the Cracking and Breaking of the Pot or Pots, upon satisfactory Proof made to the Commissioners, such Allowance shall be made for the Loss, as to the respective Commissioners shall be thought proper and reasonable.

Penalty for obstructing, 50l.

And, if any Maker of Glass, or any other Person or Persons obstruct or hinder any Officer in the Execution of the Powers hereby given, they shall forfeit 50l. for every Offence.

Makers in London and the Country when to make Entries, or forfeit 20l.

And all the Makers of Glass within the Bills of Mortality shall every Month; and every Glass-maker in any other Part of Great Britain, once in every Six Weeks; make a true Entry in Writing at the next Excise Office for these Duties, of the true Quantity of the Metals and Materials mixt and used in each respective Making of Glass, within such Month or Six Weeks, on Penalty of 20l. which Entries are to be made upon the Oath of the Maker of such Glass, or by their Clerk, Workman, or Servant employed in making the same, according to the best of their Knowledge and Belief: But, where the Person is a known Quaker, his solemn Affirmation shall be taken instead of the said Oath; which Oaths or Affirmations within the Bills of Mortality, shall be administered by the Officer or Officers appointed by the Commissioners, or the major Part of them, who shall attend at the General Excise-Office in London for that Purpose. And for all such Entries, Oaths and Affirmations as shall be made in all other Parts of Great-Britain, by the respective Collectors or Supervisors of the proper Division, without any Fee or Charge whatsoever to be demanded for the same. BUT no Glass-maker shall be obliged to go or send farther

Entries to be on Oath.

By whom to be administered.

Where to make Entry.

farther

farther than the Market-Town where his or her Glass is made; or the next Market-Town to the Place where his or her Glass is made, for the making of such Entries as aforefaid.

AND all and every Glass-maker in *London*, or *within the Bills of Mortality*, shall within *Four Weeks*, and all other and every other Glass-maker whatsoever shall within *Six Weeks* after he, she, or they shall make or ought to have made such Entry as aforefaid, pay and clear off all the said Duties for Glass due from him, her, or them respectively: And all and every such Maker of Glass who shall neglect or refuse to make such Payment as aforefaid, shall forfeit and lose *double* the Sum of the Duty whereof the Payment shall be so refused or neglected. When the Duties must be paid.

AND all Persons having paid these Duties, or who are lawfully intitled to Glass from those who have paid the Duty, may EXPORT the same; giving sufficient Security before the Shipping thereof, that all and every Part thereof shall be exported and not relanded in any Part of *Great-Britain*: But, if Glass shipped for Exportation be relanded, the Penalty of the Bond shall be levied and recovered for the King's Use, and all the Glass which shall be so landed, or the Value thereof, shall be forfeited. Who may export Glass. Forfeited if relanded.

The EXPORTER of Glass is to make Proof on Oath or Affirmation, that the Duty has been paid; which Oath or Affirmation the Collector is impowered and required to administer, and to give a Certificate *gratis*, expressing the *Kinds*, and *Weight*, and the *Duties paid* for the same; which Certificate being produced to the Customer or Collector of the Port where the Glass shall be exported, and Oath or Affirmation being also made by the Exporter before the Customer or Collector (who is authorised and required to administer the same without Fee or Reward) that the said Glass so exported is *the same* mentioned in the said Certificate, then the said Customer or Collector shall give to the Exporter a *Debenture*, expressing the true Weight of the Glass so exported, and which Debenture being produced to the Collector appointed to receive the said Duties upon Glass in such County or Place where the said Glass was exported, he shall forthwith pay to the Persons or Agents so exporting the same a *Drawback* or Allowance as follows: *viz.* For every *Hundred Weight* of all *Crown, Plate, Flint, or white Glass*, 9s. 4d. for every *Hundred Weight* of all *Green Glass*, 2s. 4d. made in *Great-Britain*: And, if the Collector has not Money in his Hands, then the respective Commissioners of the *Excise* are required to pay the said Debenture out of the Duties upon Glass arising by this Ordinance, any Thing herein to the contrary notwithstanding. The Debenture and Drawback on Exportation

BUT no *Foreign Glass* or Bottles, of any Kind whatsoever, are to be imported into *Ireland* (other than the Manufacture of *Great-Britain*) shall be landed or put on Shore, or taken out of any Ship or Vessel in *Ireland* without being forfeited and destroyed. No Foreign Glass to be imported into Ireland.

Penalty.

stroyed in *Ten Days*, after the same shall be lawfully condemned, with the Ship or Vessel in which it was imported; with her Tackle, Apparel and Furniture; and the Master and every other Person concerned in importing the same, or that have been aiding or assisting in the Landing or putting the same on Shore, shall forfeit and pay the Sum of 10*s.* for every *Pound Weight* thereof, and so in Proportion for a greater or lesser Quantity.

Contracts how to be avoided.

A N D as many large Contracts were then subsisting, and large Sums of Money advanced on those Contracts to the Glass-makers, it was ordained, That all Contracts made before the 25th of *March* 1746, and not performed before that Time, should be void and of no Effect, and the Monies advanced for Glass not delivered before the 25th of *March* 1746, to be returned with legal Interest for the same, from the Times such Sums have been respectively paid and advanced.

Of the Officer's Duty.

THE Preparations for making the different Sorts of Glass, and the Manner of manufacturing them, are so various, that I shall here only set down some of the most material Observations that now occur to me, relating to the Officer's due Performance of his Duty.

Of making Entry, and giving Notice.

The Glass-maker, (besides making Entry of his Furnaces, Warehouses, &c. as in Case of the *Excise*) must give the Officer 12 *Hours* Notice in Writing before he begins to fill or charge any Pot, expressing the Hour when such Filling is intended to be begun, and the Weight of the Metal and the Species of Glais so to be made; and, if such intended Filling shall not then be begun, the Notice given is void; and he must not begin to fill any Pot or Pots for making Glass without giving a fresh Notice, as above-mentioned.

Very necessary Cautions.

The Security of this Duty depends chiefly on due Attendance and Circumspection, therefore on every Filling of every Pot be careful to observe, that the Species of Glais be agreeable to the Trader's Declaration; and if you discover the Glass made out of any Pot to be *white*, which was declared for *green* Glass, you are to charge the whole of such Pot as *White*; and you are to take a small Sample of such Metal out of the Pot, and also a Sample of the Waste Glass when annealed, to support your Charge, and acquaint your Collector or Supervisor therewith. The Officer upon each Survey must have a great Regard both to the Quantity and Condition of the Metal in each Pot, by examining it himself with an Iron-Rod; and, if he is opposed in so doing, it will be deemed an Obstruction in the Execution of his Office; and, if from any Circumstance he has Reason to suspect any foul Practice, he must directly acquaint his Supervisor of it, and consult with him how to prevent or detect it.

The Officer must be careful to keep the Traders up to their Declarations, and to all other Parts of their Duty; and if they

they neglect it, or he discovers any Fraud, the Collector and Supervisor must be made acquainted with it; that the Trader may be prosecuted according to Law.

When any Pot cracks or breaks that has been charged with the Duty, the Officer is to make and enter an Estimate as near as he can of the Quantity of the Metal lost, which may nearly be computed by observing in what Part of the Pot the Crack or Hole is, or by the Time they have been at Work on such Pot; but he must never make any Allowance for that Loss, but an Account thereof upon Oath must be sent up to the Board by the Collector, attested by the Officer and his Supervisor, if they believe it to be true.

Of Pots breaking.
See Page 390.

Glass-makers, from the Nature of their Business, are obliged to work on *Sundays*; and therefore the Officer on those Days must so order his Visits, as to Time, that he may prevent Frauds.

Of Sunday.

Crown-glass Materials require from 24 to 30 Hours to melt and become fit to make into *Glass*, and are calcined before used, and generally put cold into the Pots, which are of the open Sort. This Glass is blown into a globular Form, and by flashing is flattened into a circular Table, and then put into an Oven to anneal.

Crown-Glass.

Plate-Glass Materials require above 30 Hours to melt and become fit to work, and are put into the Pots cold, which are of the open Sort. This Glass is formed into Plates of various Sizes; put into a pretty hot Oven to flatten, and then removed into one more moderately heated, to anneal.

Plate-Glass.

Flint-Glass Materials mostly require upwards of 40 Hours to become fine and fit to work; it is melted in capped or covered Pots, and, as the Metal is made into Glass, it is put into a Lear to anneal. The Duty on this (and the THREE above) is 9s. 4d. per Hundred Weight.

Flint-Glass.

Apothecaries Phials, &c. are made at *Flint-Glass* Houses; the Materials are about 30 Hours melting before fit to work: The Duty on this is 9s. 4d. per Hundred Weight.

There is also *enamelled* and *stained* or *coloured Glass*, these are all chargeable with the Duty of *Flint-Glass*.

Coloured-Glass.

Broad-Glass Materials are generally put hot out of the Calcar into the Pots, and require about 18 Hours melting before they are fit to work; and then it is blown into a *conical* Form, and is opened upon a convexed Body of Clay, covered with Sand in an hot Oven, called a *Strokal*, and then flattened on an Iron Plate, and put into an Oven to anneal. On all Materials for making of *Broad-Glass* of a better Quality than common Bottles, the Duty is 9s. 4d. per Hundred Weight; and those for making *Coarse Green-Glass*, the Duty is 2s. 4d. per Hundred Weight.

Broad-Glass.

Common Bottles Materials are mixt and put into a Calcar adjoining the Furnace, to heat, and from thence removed into the Pots in the Furnace, and are generally about 12 or 14 Hours in becoming fit to work.

Common Bottles.

N. B. In melting the Materials for making the several Kinds of Glass, a *Salt* or *Sandewer* ariseth on the Surface of the Metal, so that it cannot be made into Glass till the Salt or Sandewer is either taken off the Metal with a Scummer, or evaporated by the Fire, which for *Crown* and *Plate* Glasses generally requireth 18 Hours; for *Flint* Glass about 24 Hours; for *Broad* and *Pbial* Glasses about 12 or 14 Hours; and for *Common* *Bottles* about 8 or 9 Hours, from the Time of *charging* the respective Pots.

It has been found by proper Experiments, that there are in an *Averdupoise* Pound Weight of

Of Glass-makers.

<i>Flint</i> Glass	08.46	Cubic Inches, and consequently the <i>Circular</i> Divisors will be for	<i>Flint</i> -Glass	10.77	and the <i>Circular</i> Gauge Points for	<i>Flint</i> -Glass	3.28
<i>Plate</i> -Glass	09.178		<i>Plate</i> -Glass	11.68		<i>Plate</i> -Glass	3.42
<i>Crown</i> and <i>Broad</i> Glasses	10.516		<i>Crown</i> and <i>Broad</i> Glasses	13.39		<i>Crown</i> and <i>Broad</i> Glass	3.66
<i>Pbial</i> and <i>Bottle</i> Glasses	10.178		<i>Pbial</i> and <i>Bottle</i> Glasses	12.96		<i>Pbial</i> and <i>Bottle</i> Glass	3.60

The ALLOWANCES to be made in calculating the Contents of each Pot (in Consideration of the Glass *spitting*, waste Metal in the Manufacturing, and the Metal left in the Bottom of each Pot) are these, *viz.* In *Flint* and *Pbial*-Pots one *Fourth* of the *Area*, and one *Inch* in the *Bottom*: For small Pots under the Denomination of *Pile* *End*, *Two Tenths* of the *Area* only is sufficient. In *Crown*-*Plate* and *Broad* Glasses Pots, One *Fourth* of the *Area*, and *four Inches* in the *Bottom*. In *Bottle* Pots, One *Fifth* of the *Area*, and *three Inches* at the *Bottom*.

C H A P XIX.

Concerning the Duty of the Supervisor and Collector.

I. Of the SUPERVISOR.

THE Supervisor is to keep all the Officers strictly to their Duty, by frequently surveying each Division; but this he must not do in a constant Course from one Division to another, as they lie in Order, but accordingly as he finds the Officers more or less tardy. Must keep the Officers to their Duty. AND after he comes into any Division, be it either a Foot-Walk or a Ride, he must immediately secure the Journal, and endeavour to find out the Officer himself, and not send for him; and he must take the Officer's Books before he can have Notice of the Supervisor's being got into his Division. 'Tis a Part of the Supervisor's Duty to observe if the Officers, who are to keep Horses, are so mounted, that they may be able to perform their respective Business as they should do; and to report the same to the Commissioners. Must see the Officers well mounted, &c. IT is contrary to the Supervisor's Duty to borrow Money, or become in any wise indebted to any of the Officers he surveys.

'TIS a Part of the Supervisor's Duty to see that the Officers Expences are not unreasonable at the Sitings. His Duty as to the Officers. NOR is he to permit them to spend their Time in unnecessary Attendance there, but get them dispatched as soon as possible, and send them into their respective Divisions. Time and Expences at the Sitings.

The Supervisor when he asks Leave for himself, or for any Officer, to be absent, he must mention in his Letter at what Time, he or the Officer he asks Leave for, intends to set out, and, if either the Supervisor or Officer do not set out at the Time mentioned, neither of them must go without a fresh Permission.

THE Supervisor, at stated Times, is to enter in his Diary his own Age, and that of every Officer and Assistant in his District, setting forth how many each has in Family; and how long each has been employed in the Excise: When he must enter his own and the Officers Age in the Diaries. ALSO how long he has been a Supervisor, and how long he has been in his District, and the Officers under him in their respective Divisions; and this he is to do in a clear and satisfactory Manner in every 2d, 4th, 6th and 8th round Diaries.

THE Supervisor, in Conjunction with the Collector, is to report to the Board, when any Officer, by Age or otherwise, becomes unfit for his Division. His Duty as superannuated Officers, &c. AND he is to report how he finds each Officer qualified when he first comes into his Division. AND it is his Duty to observe no Officer be placed in a Division where he must survey any Person that may induce

Must get Insight
into Trades, and
obtain the best
Length, &c.

him to be partial in the Execution of his Duty. 'TIS highly incumbent on the Supervisor, that he endeavour to come at a compleat Understanding of the Nature of every Person's Trade he surveys, and likewise of the Manner of their respective Workings. AND he must also exert his utmost Endeavour he can, to obtain of all Distillers, Victuallers, and Common-Brewers the *Best* Lengths, and he must observe whether the Officer comes up to such Lengths, and whether the Quantity and Quality of the Drink charged do correspond with what he may reasonably expect from the Quantity of Goods or Malt made use of. NOW, to prevent Frauds in Steepings of Corn by its lying longer in the Cistern than usual, the Supervisor must acquaint the Officers, that when any Steepings are an uncommon Time in the Cistern, they must not fail to write the Reasons of it in the Fronts of their Books, which the Supervisor is to examine into, and if he finds it true, he is to attest the same by putting his Name to it.

Must re-examine Dimensions of Casks and Utensils.

THE Supervisor is to try the Dimensions of all Casks and Utensils by re-gauging them; and to put the two first Letters of his Name on such as he has so examined. AND he is to examine the Dimensions of all the open Utensils at least *once* every Year, and of as many of the close Casks as he possibly can; and he must take all Opportunities of examining if the Dipping-places in the Backs of Victuallers and Common-Brewers be properly and truly fixed.

How he must report the Officer, &c.

BUT on all Occasions the Supervisor must make an impartial Report how each Officer complies with his Instructions and performs his Business; amply and clearly setting forth the Faults he finds either on Survey or Examination of the Books, and this he must do without any Disguise whatever. 'TIS no Part of the Supervisor's Duty to trouble the Board with a tiresome Account from the Examination of the Books of such Things as are only Slips of the Pen; or of Mistakes, which are merely accidental; or trifling Errors, which have been discovered and properly rectified in due Time, and which cannot be supposed to proceed from careless or feigned Surveys or stamped Gauges; nor to be done to cover any Negligence or Fraud: But when he discovers such Mistakes or Blunders, as appear to be the Effect of careless or feigned Surveying, &c. he is to give an impartial and full Account, that the whole Truth thereof may plainly appear to the Board. THE Supervisor is not to give any Person the Character of any Officer whatsoever except the Collector, without the Board's express Orders. BUT when the Supervisor finds any Officer guilty of a fraudulent Practice, or such other Failing as he believes renders him unfit to be trusted in the Business till the next Sitting; such Officer is to have a Copy of the Supervisor's Report shewed him, and his Answer is to be demanded; both which are immediately to be sent to the Collector to be transmitted to the Board, with his own Observations upon it.

THE

THE Supervisor, at least a Month before he expects them to be sent, must not neglect sending to the Clerk of the Stores an Account of what Books will be wanting for each Division, having always a Regard to the Time of the Year, especially as to the Candle-Books, very few of which need be so large in the Summer as in the Winter. The Clerk of the Stores will, upon due Notice, supply him with all Blanks and Papers he wants. THE Supervisor must never deliver any Officer any Specimen-paper before he has signed it with his Name; he must likewise be careful no Officer has more Specimen-paper at one Time than those that are actually in use. AND he is to page and Sign all Leaves which there is Occasion at any Time to add to any Officer's Books. HE must send a Bill of Parcels with all new Books he sends to the respective Officers, which must contain an Account of the Number of Books and Permits of each Sort sent at that Time. IF upon the Receipt of *Permit-Books* the Supervisor does not find the Number of each Sort agree with the Account entered on the Outside Book of each Parcel, he must immediately acquaint the Examiner of Permits therewith, and, if he fails in this, he will be accountable for the Number the Examiner charged sent. THE Supervisor, before he delivers out the *Permit-Books* to the Officers, is to write, on the Cover of each Book, the Collection and Division it is for, and sign his Name to it. AND he must charge the Officers not to give a Permit for *foreign Goods* out of a *British Book*, or a Permit for *British Goods* out of a *foreign Book*. NOR must they cut out any Permit before they have filled up the Counter-part. They must begin with the first Leaf, and cut out Leaf after Leaf, without missing any. NOR must they offer to begin a new Book before the former is all used, nor use a *Permit-book* in any Round it is not titled for. THE Supervisor must make it his Business to compare the Increase and Decrease (in Quantity as well as Quality) in the Stocks belonging to Dealers in Coffee, Brandy, &c. with the Permits received and given from Time to Time; and when he finds any Disagreement, he must make a strict enquiry into the Reason of it. HE must diligently observe how the Quantities of Tea, Coffee, &c. which are entered in the Books kept by the Dealers in those Commodities, do agree with their Decreases in Stock from Time to Time; and, when he discovers any considerable Disagreement, he must examine into the Reason of it. THE Supervisor is to be exceeding careful to discover if any Officer delivers out Permits for larger Quantities than he entered in the Register or Counter-parts: And it is his Duty to compare the Register with the Permits received, and Counter-parts of Permits sent out. AND at such Time as an Officer gives Notice of his having received any Permit for Coffee, Brandy, &c. after it is expired, the Supervisor must be careful to examine into the Reason of it, *i. e.* whether the

His Duty as to writing for Stores.

His Duty as to Specimen-papers.

His Duty as to Permit-books, &c.

And what the Officers must observe as to Permits.

They must compare the Stock with the Permits, &c.

Goods were really accidentally detained upon the Road, or whether that is not made use of as an Excuse, and that the same Permit has served to cover more Qualities than one, and, when he has Reason to suspect a Fraud, he must represent the Matter truly to the Board, with all its Circumstances.

When to account
for Chocolate-
Labels.

EVERY *three Months* the Supervisor must account with the Collector for the Number of Chocolate-Labels sent from the Office, distinguishing how many have been made use of, and what Number remain in his Hands. ALL Chocolate, Tea, or Coffee condemned in the Country, if it exceeds *five Pounds*, must be sent up to the Office, accompanied with a Permit, importing, that it has been condemned; and this must be sent to the Accountant for the Fines and Forfeitures for the Time being, within one Month after Condemnation. THE Super-

How his Time
must be disposed
of:

visor is not to spend more Time in or about his Residence than is necessary, and so neglect the Business in the more remote Parts of his District; *neither* must he hurry over his Business in the remote Divisions, nor must he spend too much Time in Long-journeying, that he may get home the sooner; *neither* must he spend more Time than is necessary for transcribing his Diary, or for signing the new Journals and Specimens, or for sending away new or old Books, transcribing Check Books, examining Dimension-Books, &c. *Neither* must he lay hold of trifling Occurrences to excuse him from surveying, and thereby frequently make Holidays, especially on *Saturdays* and *Mondays*; for he ought to survey as much each Day as is consistent with a perfect Discharge of all the Branches of his Duty. THE Supervisor is to make Affidavit of the Truth of every particular Bill of Incidents that amounts to Ten Shillings, or upwards which he receives of the Collector. And, when he attends the Collector, must ride with Pistols.

Must swear to
his Expences,
&c.

The Supervisor's Duty, as to giving Certificates before and after Instruction, will be found on Page 222.

II. Of the COLLECTOR.

Drawbacks on
Soap.

See Page 363.

WHEN any Person shall apply to the Collector for a Drawback upon Soap, spent in the Woollen Manufacture, he must demand from such Person an Entry in Writing, signed by him or her, containing the Kinds and Quantities of the Manufactures made, finished, and prepared; and the Days betwixt which and the Place where the same were so made, &c. As also of the Kinds and Quantities of Soap actually employed, spent, and consumed therein; from which he must make out the Affidavit required, and keep all such Entries on a File for that Purpose; and in order to make a Compare from Time to Time of the Quantities of Soap spent, and Manufactures washed, scoured, made, &c. therewith, by each Person respectively, he must abstract the Affidavits into a Book kept for that Purpose; which Book, upon his Remove, is to be left with his Successor.

AND

AND the Collector is to administer the Oath to the Manufacturer, or his chief Workman, in the Presence of the Supervisor, or Officer of the Division; and when he pays any Money on such Affidavits, it must likewise be done in the Presence of the Supervisor or Officer who are, in either Case, to attest the same. BUT the Collector is not to pay the Drawback of any Soap consumed out of his Collection, though the Manufacturer lives within the same; nor to any Person, until he is satisfied, that the Person who applies to him for such Drawback, be the very Person to whom the said Drawback is due, or his chief Workman.

THE Collector, his Supervisors, and Officers, must likewise endeavour to discover whether the Manufacturer does not claim more than he actually expended, by inspecting his Account of Soap used, and Manufactures scoured, &c. and by his comparing the Quantities of each with those of the former Year; and with the Quantities of Soap usually spent by others in scouring, &c. the like Quantities of such Manufactures; and, if at any Time he discovers a Fraud, he must immediately acquaint the Board with it. A Caution.

WHERE the Collector finds any Victualler lives so remote from the Officer, that he cannot be duly surveyed, without preventing the Officer's surveying as close as is necessary in the more considerable Part of his Business, he and his Supervisor are to acquaint the Commissioners therewith, and get their Leave to make a Composition with such Victualler for the Duty; which Composition is to be made for one Year, but not for less than the Produce of the former Year: AND he is to give a Bond for the due Payment of such Composition; but where an advantageous Composition cannot be made, the Collector must join with the Supervisor in giving Directions in the Front of the Officer's Excise-Book, how often, and in what manner the same shall be surveyed. Of Compounders.

THE Collector must, at all Hearings, be as frugal as he can in his Expences, and not to entertain, at the Expence of the Revenue, Persons who are no way concerned in the Cases to be heard, or the Offenders, or their Council, or Witnesses; for, when the Expences at the Hearing of one or more Informations in one Day amount to more than *Forty Shillings*, what exceeds that Sum will be disallow'd, if any Part of the Expence be occasioned by entertaining of any Persons besides the Justices of the Peace and their Servants, and the Council, Officers, and Witnesses concerned for the King. ALL the Surcharges sent from the Examiner's Office the Collector must receive by equal Proportions from the Officers of the Divisions where they are made, and from the Supervisor, who neglected to observe them when he examined the Officer's Books and Vouchers, unless the People surcharged are content to pay them; and the Collector must also give Notice of any Overcharge, which shall be sent him, to the Person overcharged, that he may lay his Complaint, in order to be relieved therein. Of Expenses at Hearings.

Of his Clerk.

His Duty as to
the Supernume-
rary.

Of paying the
Officer that is
appointed an
Examiner.

His Duty when
an Officer is re-
duced, or dis-
charged, &c.

THE Collector, before he takes a new Clerk, must send his Name, Age, and Qualifications, to be approved of by the Commissioners, who have directed also that no Officer be put to any Expences on account of his Clerk's Ordinaries or Extraordinaries; and that he gives a Receipt (in the Salary Book) for the Salary he pays him, without which it will be disallowed in his Accounts. WHEN the Collector is off his Round, and his Supernumerary not employed in some Officer's Business, he is to place him as an Assistant in such Division, as he and his Supervisor think will most conduce to his Improvement and the Service of the Revenue: BUT in Case any Officer be sick, or have Leave to be absent, he is not to confine the Supervisor in such Officer's Division, but place the Supernumerary therein, if he be capable of performing the Business; if not, he must put some other Officer there; and the Supernumerary in that other Officer's Business, and, whilst the Supernumerary is so employed, the Portmanteau must be carried by the Collector's Clerk, if he is allowed one; if not, he must hire a Person to carry it; and, if this be occasioned by any Officer's being absent by Leave, such Charge must be paid by the Officer so absent; but if it be occasioned by Sickness, such Charge must be placed to Incidents, and, during such Time, the Collector is not to claim Riding Charges for the Supernumerary, but make up his Salary equal to the Officer's for the Time he officiates as such. THE Collector must not pay any Supernumerary that shall be ordered into his Collection, but from such Time as he comes into it, tho' he may have been ordered some Time before; and by the first Opportunity he must inform the Commissioners when he came into his Collection, and how he finds him qualified, whether he has a good Horse, and proper Instruments. WHEN an Officer shall be appointed an Examiner, the Collector must pay him Officer's Salary for so many Days as shall be necessary for the Performance of his Journey to the Office, and give such Officer a Certificate, expressing to what Day he pays him Salary as Officer, and how many Days Salary he has allowed him for his Journey. BUT, when an Examiner is appointed Supervisor, his Salary, as Supervisor, is not to commence until he comes into his District; unless he brings Orders from the Board to the contrary.

When the Supervisors or Officers are discharged, or reduced, the Collector is not only to give them Copies of their respective Discharges, or Reducements, but to such Supervisors, or Officers also, as respectively shall succeed them, that they also may see the Faults for which their Predecessors incurred the Censure of the Board. THE Collector must see that all the Officers in his Collection have taken the Oaths, and that they comply with their Instructions in every Respect; and when he finds any that neglect their respective Duties, or are extravagant in their Living, or oppress the People, he must acquaint the Commissioners therewith.

C H A P. XX.

Instructions for obtaining the Allowance of the Drawbacks, or Bounties on the Exportation of several Exciseable British-made Goods to Foreign Parts, viz. I. Beer, Ale, Mum, Cyder, and Perry. II. Malt of Barley and Wheat. III. Leather Tann'd, Taw'd, or dress'd in Oil, &c. Boots, Shoes, Gloves, &c. IV. Soap. V. Candles, VI. Starch. VII. Papers, Paste-board, &c. VIII. Silks, Callicoes, Linens, &c. IX. Spirits drawn from Barley, Malt, or other Corn.

I. The Drawback of the Excise on Strong Beer, Strong Ale, Mum, Cyder, and Perry made in Great-Britain *.

Of the Drawback on Beer, Ale, Mum, Cyder and Perry.

AN Y of the *aforsaid* Liquors may be shipped off to be exported into Foreign Parts, as Merchandise, from the common Keys of any lawful Port, within the usual Hours of Excise, in the Presence of a sworn Gauger, or other sworn Officer of Excise, upon Notice given at the Excise-Office, within the Limits whereof the said Liquors were brewed or made; and upon the said Gauger's or Officer's certifying the Quantity of such Liquors shipped off, to the Officers of Excise where the Entry was made, they are to repay the Excise of the said Liquors so exported, to the Brewer or Maker thereof, within one Month after Exportation, deducting 3d. per Ton Charges, &c. but no Drawback to be allowed for what is taken aboard for the Ship's Use.

The *aforsaid* Liquors unladen or laid on Land, or put into any other Ship or Vessel within Great-Britain, are forfeited, and 50l. for every Cask.

C c 4

II. The

* The Acts of Parliament relating to the Drawback, &c. on these Liquors, which for more particular Satisfaction may be consulted, are, 1 W. and M. Chap. 22. Sect. 1, 2. 5 Ann. Chap. 8. Art. 7. 4 Geo. 1. Chap. 3. Sect. 8, 10. 7 Geo. 1. Chap. 20. Sect. 2.

Of the Bounty
on Malt export-
ed.

II. The Bounty on MALT Exported.

	Price per Quarter. Winchester Mea- sure.	Bounty per Quarter, Winchester Mea- sure.
Malt made of Barley *	1 4 0	0 2 6
Malt made of Wheat	2 8 0	0 5 0

But the Excise of 9d. per Bushel must not be reckoned into the Price of the Malt.

The Excise of
9d. per Bushel
not to be inclu-
ded.

A Bond to be
given.

After what Rate
to be allow'd.

When the Bond
is to be deliver'd
up.

Malt re-landed
forfeited, and
treble the Pe-
nalty of the
Bond.

When the above Sorts of Malt ground or unground do not at the Port of Exportation exceed the respective Prices above-men- tioned, and shall be shipp'd aboard a *British Ship*, whereof the Master and at least two-thirds of the Mariners are *British Subjects*, in order to be exported to Parts beyond the Seas, the Ex- porter is to be allowed the Bounties above-mentioned, provided a Certificate in Writing under the Hand of the Exporter, con- taining the Quantity and Quality of the Malt, be first brought to the Collector of the Port, and the Truth thereof confirmed by the Oath of one or more credible Person or Persons, and a Bond be given by the Exporter of 200l. for every 100 Tons, (i. e. 8s. per Quarter) that the same shall be exported into Parts beyond the Seas, and not be re-landed in Great-Britain, or the Islands of Guernsey or Jersey.

But then this Bounty upon Malt is only to be allowed after the Rate of 30 Quarters, and no more, for every 20 Quarters of Barley, or other Corn or Grain entered and made into Malt for Exportation, as shall appear by a Certificate from the Officer, with whom the Corn or Grain intended to be made into Malt for Exportation, was entered. The aforesaid Bounty to be paid by the Collector of the Port upon Demand made by the Expor- ter, unless he has not sufficient Money in his Hands, and then he is to certify the same to the Commissioners of the Customs, who are to cause the Money to be paid by the Receiver-Gen- eral within three Months.

The aforesaid Bond given for the Exportation may be deli- vered up to be cancelled, upon producing a Certificate under the common Seal of the Chief Magistrate, in any Place beyond the Seas, or under the Hand and Seal of two known British Merchants, testifying, that the Corn was there landed; or upon Proof by credible Persons, that it was taken by Enemies, or perished in the Seas.

Malt re-landed in Great-Britain is forfeited, with treble the Value, besides the Penalty of the Bond, and since continued Yearly with the Malt-Act.

III. The

* The Acts relating to the Drawback on Malt and Barley Exported, are 1 W. & M. Chap. 12. Sect. 2. 12 & 13 W. III. Chap. 10. Sect. 94. 5 Ann. Chap. 29. Sect. 10. 3 Geo. II. Chap. 7. Sect. 15.

III. *The Drawback on Hides and Calves-Skins, Tann'd, Taw'd, or Dress'd in Great-Britain *; for every Pound Avoirdupoise Weight is two Thirds of the Duties that have been paid for the same.* Of the Drawback on Hides and Calves Skins.

All Hides or Calves-Skins, dress'd or curried, are also to draw back One Penny per Pound Weight, as they shall weigh at the Custom-house. Of Hides and Calves Skins dress'd or curried.

Note, All Sheep Skins, and Lamb Skins, which are tann'd, taw'd, or dress'd, are to draw back two Thirds of the Duty. Of Sheep Skins and Lamb Skins,

N. B. See Part II. Chap. X. for a Table, shewing the Duties payable for the several Sorts of Leather.

The Hides and Calves Skins having paid Duties at the Time of Tanning, and having been mark'd with a Stamp, to denote the same, the aforesaid two-third Parts of those Duties may, upon Exportation to Foreign Parts, be repaid by the Collector of the Duty at that Port, provided sufficient Security be first given to the Collector of the Customs, that they shall not be re-landed in Great Britain; whereupon the said Collector is to grant a Debenture, expressing the Kinds, Quantities, and Weights exported; and this Drawback may be allowed, altho' the Marks have not been seen by the Officers of the Customs, provided that Oath be made before the Collector of the Customs, that the Hides or Skins contain'd in the respective Bales or Packs were mark'd with the Stamps, denoting the Payment of the Duties, and how much the Duties amounts to, together with the Weight exported; but, if any of the said Skins or Hides are re-landed, they are forfeited, and treble the Value. Hides and Calves Skins tanned, having paid Duty.

The Drawback, on Boots, Shoes, Gloves, and other Manufactures made of Leather tann'd, taw'd, or dress'd in Great-Britain, is for every Pound Avoirdupoise Weight, One Penny Half-penny.

How the several Sorts of Hides and Skins are to be mark'd or stamp'd, is shewn Part II. Ch. X. and so are the several marking Denominations of Tann'd Hides, which are comprehended under the Names of Sole Leather, Upper Leather, Bends, Clouts, Butts, and Backs. Concerning the marking Hides and Skins, &c.

IV. The

* The Acts of Parliament, which relate to the Drawback on Leather of all Sorts, and Manufactures made of Leather exported, are, 9 Ann. Chap. 11. Sect. 39, 40. 10 Ann. 26, Sect. 6. 12 Ann. Chap. 9. Sect. 68, 69. 3 Geo. I. Chap. 7.

Of the Draw-
back on Soap.

IV. *The Drawback on British-made SOAP*, for every Pound Avoirdupoise Weight is One Penny Half-penny.*

Which Duty (having been paid by the *Maker*) may be repaid by the *Collector*, upon Exportation, *provided* Security be given to the *Collector* of the Port *before Shipping*, that they shall not be re-landed in Great Britain, and Oath be made before the *Collector* of *Excise*, that the Duty has been paid, and a *Debenture* granted by the *Collector* of the *Customs*, expressing the *Kinds* and *Quantities*, and the *Shipping*, testified by the *Searcher*: But, if re-landed, forfeited, or the *Value*, besides the *Penalty* of the *Bond*.

Of the Draw-
back on Wax
and Tallow.
Candles.

V. *The Drawback on British-made CANDLES†. Wax Candles the Pound Avoirdupoise Weight is Eight-pence: All other Candles the Pound Avoirdupoise Weight is One Penny.*

Which Duties (having been paid by the *Maker*) may be repaid by the *Collector*, upon Exportation, *provided* Security be given to the *Collector* of the *Customs*, before *Shipping*, that they shall not be re-landed in Great-Britain, and Oath be made before the *Excise Collector*, that the Duties have been paid, and his *Certificate* thereof with the *Kinds* and *Quantities*; and likewise Oath before the *Collector* of the Port, that they are the same mentioned in such *Certificate*: Whereupon the *Collector* of the *Customs* is to grant a *Debenture*, expressing the true Quantity exported; but, if re-landed, forfeited, or the *Value*, besides the *Penalty* of the *Bond*.

Of the Draw-
back on Starch.

VI. *The Drawback on British-made STARCH§, for every Pound Avoirdupoise Weight is Two-pence.*

Which Duty (having been paid by the *Maker*) may be repaid by the *Collector*, upon Exportation to Foreign Parts by way of Merchandise, *provided* sufficient Security be given to the *Collector* of the Port *before Shipping*, that it shall not be

* The Acts relating to the Exportation of British-made Soap, are, 10 Ann. Chap. 19. 12 Ann. Sess. 2. Chap. 9. 3 Geo. I. Chap. 7. 6 Geo. I. Chap. 4.

† The Acts relating to the Exportation of British-made Candles, are 8 Ann. Chap. 9. 9 Ann. Chap. 6 & 21. 3 Geo. I. Chap. 7.

§ The Acts relating to the Exportation of British-made Starch, are, 10 Ann. Chap. 26. 12 Ann. Sess. 2. Chap. 9. 3 Geo. I. Chap. 7. 6 Geo. I. Chap. 4.

Ch. XX. Of Drawbacks and Bounties.

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be re-landed in Great Britain, and Proof be made upon Oath before the Collector of the Customs, that the Duties have been paid: Whereupon the said Collector is to grant a Deventure, expressing the Kinds and Quantities, with the Shipping, testified by the Searcher; but if re-landed, forfeited, or the Value, besides the Penalty of the Bond.

VII. The Drawback to be allowed on British-made Papers, Millboard, PASTE-board, and Scaleboard; Of the Drawback on Paper, &c. as also on Printed, Painted, or Stained Paper for Hangings*, are the respective Duties thereon, which you will find set down Part II. Chap. XIV.

Which Duties are to be repaid on Exportation under the same Regulations as British-made Soap; for which see Page 404.

VIII. The Drawback on Silks, Callicoes, Linens, and Stuffs, printed, painted, stained, and dyed in Great Britain, is specified by Acts 10 and 12 of Anne†.

Of the Drawback on Silks, Callicoes, &c.

N. B. Callicoes, Linens, and Fustians, dyed throughout of one Colour, and Stuffs made of Woollen, or whereof the greatest Part in Value shall be Woollen are excepted out of the said Acts. The Exporter, before Shipping, to give Notice to the proper Officer appointed by the Commissioners of the Customs, when and where he intends to pack up the Goods, who is to take Care that the Stamps be taken off from each Piece, and to return an Account of the Kinds and Quantities to the Officer appointed to receive the same, which Duties are to be repaid upon Exportation under the same Regulation as British-made Paper above.

IX. Concerning the Allowance of the Drawbacks or Bounties on the Exportation of several Exciseable British Goods to Foreign Parts §.

Of the Drawback on Exciseable British Goods.

Bounty on Spirits exported, drawn, from Barley or other Corn, payable at the Custom-house.

For

* The Acts relating to the Exportation of British made Paper, &c. are, 10 Ann. Chap. 19. 12 Ann. Sess. 2. Chap. 9. 3 Geo. I. Chap. 7. 6 Geo. I. Chap. 4.

† The Acts relating to the Exportation of Silks, Callicoes, &c. are the same that relate to the Exportation of British-made Paper next above.

§ The Act relating to the Exportation of the several Exciseable British Goods, is 6 Geo. II. Chap. 17. Sect. 10. And I apprehend there is some further Allowance on Exportation by the Acts of the 16th and 19th of Geo. II.

Of Drawbacks and Bounties. Part II.

For every Ton of *Spirits* drawn from *Barley, Malt, or other Corn*, there shall be paid to the *Exporter* by the *Commissioners of the Customs*, or the proper Officers belonging to them, when *Barley* is at 24s. per *Quarter*, or under, on such Proof of the Exportation thereof, as is directed by the *Act 1 Will. and Mary*, for encouraging the *Exportation of Corn*, out of the Duties liable to the Payment of the *Bounties* on *Corn* exported, *One Pound Ten Shillings*, and so in Proportion for a greater or lesser Quantity.

All * *Wash and Low Wines*, and *Spirits* therefrom made for Foreign Exportation, are exempted from the Duties of Excise. And no Drawback or Allowances are to be paid thereon. But such *Low Wines* or *Spirits* as are designed for Exportation, are to be kept apart from all other *Low Wines* or *Spirits* whatsoever for Home Consumption, and are to be put in Casks, and secured in some entered and approved Warehouse under three Locks and Keys, until delivered out by the proper Officers for Rectification or Exportation.

A Gallon of *Brandy or Spirits*, of the Strength of one to six, under Hydrometer Proof, is to be reckoned at 7lb. 13oz. the Gallon.

C H A P. XXI.

Of CASK-GAUGING,

Of Gauging at
the Water-side.

As practised at the Water-side in the Port of London.

See also *Part I. Chap. XXV. and Plate 4. Fig. 3, 4, 5.*

THIS Part of the Art of Gauging is comprehended under the *Mensuration of Solids*; because the *Contents* of all Sorts of Vessels used for *Liquors*, are computed as tho' they were really *solid Bodies*, as by the following Dimensions of the respective Gallons will appear.

The * *The Act* relating to the Exportation of the several *Excidable British Goods*, is, 6 *Geo. II. Chap. 17. Sect. 10.* There is some further Allowance on Exportation, by the *Acts* on the 16th and 19th 8 *Geo. II.* also by the 2d *Geo. III.*

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The Standard *Ale* Quart, now kept in the *Exchequer*, made in Pursuance of the 12th of *Henry the VIIIth*, *Cap. 5.* contains 1700 Pounds of *Wheat Troy Weight*, which having, by Experiment, been found to contain $70\frac{1}{2}$ Cubical Inches; therefore the *Ale* and *Beer* Gallons, which by 12 *Car. II. Cap. 23. Sect. 8.* is declared to contain four of those Standard Quarts, must contain 282 Cubical Inches. See Part I. Pages 120, 122, and 185.

And it is enacted and declared by 5 *Ann. Cap. 27. Sect. 17.* that any round Vessel, commonly called a *Cylinder*, having an even Bottom, and being 7 Inches Diameter throughout, and 6 Inches deep from the Top of the Inside to the Bottom, or any Vessel containing 231 Cubical Inches, and no more, shall be deem'd and taken to be a lawful *Wine* Gallon.

And that $\left\{ \begin{array}{l} 252 \\ 126 \\ 63 \end{array} \right\}$ such Gallons shall $\left\{ \begin{array}{l} \text{a Ton} \\ \text{a Pipe or Butt} \\ \text{an Hogshead.} \end{array} \right\}$ of $\left\{ \begin{array}{l} \text{The Ton, Pipe,} \\ \text{and Hoghead.} \\ \text{Wine.} \end{array} \right\}$

So that, As $\left\{ \begin{array}{l} \text{the Ale or Beer Gall. is to con. 282} \\ \text{the Wine Gallon is to contain 231} \end{array} \right\}$ Cubical or Solid Inches. Ale and Wine Gallons.

Therefore, as often as either of these Cubes are contained in any other Number of Cubical Inches, so many Ale and Beer or Wine Gallons are contained therein; so that if a Cask was to be reduced to a Rectangular Figure, and the Content in Inches divided by the said Cubes, the Quotient would exhibit the Quantity of Gallons it contains.

But, as Casks are made round instead of being reduced to a Rectangular Figure, they may more easily be reduced to a Cylinder, under which Form the respective Gallons contain, viz. Casks easily reduced to a Cylinder.

The Ale Gallon 359 } Cylindric or Circular Inches. See
The Wine Gallon 294 } Part I. Page 47.

Having thus defined the Ale and Wine Gallons, I shall now proceed to shew how the Contents of any Cask may be found in either of those Gallons: Now, in order to perform this, you must, first, by the Assistance of proper Instruments, take the respective Dimensions of the Casks, viz. Contents of Casks how found.

The Diameter at the Bung within the Cask, }
The Diameter at either Head, supposing the } In Inches and
two to be equal, } Decimal Parts
The Length of the Cask within } of Inches.

And, in taking the Dimensions of the Cask, you must observe what is said in Part I. Chap. XXV. that the Bung-hole be in the middle of the Cask, and that as far as possible the Staves be regular and even within, and that the Heads of the Casks be equal and truly Circular, and that in taking the Length of the Casks with a Pair of Sliding-Calipers you observe, that they are so contrived, as to make an Allowance

Of Thickness of
the Heads.

Shape of the
Cask to be con-
sidered, and why.

allowance of 2 Inches for the Thickness of the two Heads, which is equal to the usual Thickness of the Heads of Pipes, Butts, and other large Casks; but as the two Heads of an Hoghead are usually not more than $\frac{1}{2}$ Inch thick, therefore $\frac{1}{2}$ an Inch must be added to the Length found by the Callipers; and so for the Proportion of what the two Heads of any other Cask may want of the two Inches allowed by the Callipers; and if, upon boring the Heads of any Cask, they are found to exceed the 2 Inches allowed by the Callipers, then the Excess must be deducted from the Length found, and the Remainder will be the true Length within the Cask after the Dimensions are taken: You must next consider the Form or Shape of the Cask, as under which of the Varieties it may be comprehended; for altho' the Dimensions of several Casks may be equal, yet according to the Curvature of the Staves they will contain more or less Liquor; therefore it is plain, that no one certain or general Rule can be prescribed to find the true Content of all Sorts of Casks. See Plates 3. and 5.

See Plate I. Fig. 18.

A and B represent two Rods to slide by each other, and which are divided into Inches, and these into Decimals or Tenths. C and D represent those Parts of the Callipers, which are to touch both Ends of the Cask you want the Length of; when the Callipers are so fixed, that C and D touch the Heads of the Cask, the Length of it is shewn by the Figures upon the Rod A and B.

With the Callipers there are usually two other Rods made use of, called the Head and the Bung Rods, for finding the Diameter at the Ends and Bung of the Cask; and these three Instruments are accurately made by Mr. John Gilbert (living in Postern-Row, Tower-Hill) Mathematical Instrument Maker to the Custom-House in London, and the Out-Ports.

As to the several Forms or Shapes of common Casks, such as Pipes, Butts, Hogheads, Arms, Barrels, &c. it is agreed, that they may all be pretty nearly comprehended under some One of the Solids. See Chap. XXV. of Part I.

A Note.

Note, No Cask will contain more than the middle Frustrum of a Spheroid, or less than the middle Frustrum of two Cones; so that all the Varieties will be between those two; and if, by observing the Form of a Cask, it be thought not to be strictly of any of the five Varieties, such Allowance must be made by Discretion, as will reduce it to the nearest of the said Forms; the properest Method of making which Allowance being either by adding to or subtracting from the real Length.

Casks how to be
entered in the
Officer's Books.

Tho' in the Theory of Gauging it is proper, for Demonstration Sake, to treat of the several Forms under which all Casks may be comprehended, and to shew how their Contents may be found; yet in the Practice of the Customs and Excise

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at the *Water-side* in the Port of *London*, as most Casks may be justly comprehended under the *first Variety*, and, when they are of any *other Form*, it would be necessary to specify it in the *Land-waiters* and *Excise-Officers* Books, for the Information of those who are afterwards to examine and checque the *Accompts*; therefore the Contents of all Casks are inserted in the said *Officers Books*, as if they were really of the *first Variety*; and in Consideration of their being of any other of the *aforsaid five Varieties*, or a *Medium* between any of them, they make such *Allowance* in the *Length*, either by *adding* or *subtracting*, as from the Judgment of their Observations will reduce them to *that Form*; but this requires much Practice and nice Observation, more than I fear can be met with among the *Officers* of any *other Port*.

Since I am treating of Cask-Gauging, &c. practised at the Custom-House; the following Remarks about imported Goods may possibly be of some Use to those Officers who survey Sea-Port-Towns.

ANCHOVIES, the little Barrel to contain 16 Pounds Anchovies. of Fish.

APPLES, the Barrel to contain 3 Bushels.

Apples.

ARGOL, in Casks, the Tare is 14lb. per Cent.

Argol.

POT-ASHES, the Tare is 10lb. per Cent.

Pot-Ashes.

PEARL-ASHES, of and from Germany, the same as Pearl-Ashes. Pot-Ashes.

WEED-ASHES the LAST, to contain 12 Barrels of Weed-Ashes. 200lb. each.

BASKET-RODS, the Bundle is to be 3 Feet about at Basket-Rods. the Band.

SPRUCE-BEER is always imported in Kegs, or half Spruce-Beer. Kegs; the Keg containing, when full, 4 Gallons, and the half Keg 2 Gallons.

So that 10 $\frac{1}{2}$ whole, or 21 half Kegs, when full, are Kegs and half esteemed a Barrel for the Customs; and 8 whole or 16 half Kegs.

Kegs, when full, are esteemed a Barrel for the Excise. But, as the said Kegs and half Kegs are never imported quite full, therefore some are usually emptied to fill up the rest; and sometimes (tho' but seldom) they are not filled up, and then about 1 in 10 is allowed, in Consideration of what they want of being full.

N. B. The Barrel to contain { for the Customs 42 } Wine Gall. { for the Excise 32 }

HIDES in the Hair, and not chargeable with the new Hides.

Duties, are only to be tallied at the Delivery; but the following Sorts being *tann'd*, *taw'd*, or *dress'd*, are to be *stamp'd* with a proper Hammer, to denote the Payment of the new Duties granted by 9 Anne, chap. 11. and 10 Anne, chap. 26. See Part II. Chap. X. Page 350.

Buffalo,

Buffalo.
Elk.
Loosee.
Russia.
Cow.
Horse.
Gelding.
Mare.
Steer.
Honey.

Buffalo,
Elk,
Loosee,
Russia,
Cow,
Horse,
Gelding,
Mare,
Steer,

and all other Hides dressed in Oil or Tann'd.

and all other Hides dress'd in Allum and Salt, or Meal, or otherwise Taw'd.

HONEY, 12 Pounds make a Gallon.

42 Gallons make a Barrel.

Hops.
Mum.

HOPS in Bags, Tare 4lb. per Cent.

MUM the Barrel { for the Customs 42 } Wine Gallons.
to contain, { for the Excise 32 }

Mum is imported in Casks of a certain Size, viz.

Barrels.

Barrels, containing when full 48

Half-Barrels.

Half-Barrels, containing when full 24 } Gallons

According to which Contents they are always passed, it being impracticable to gauge them by reason of the Froth, and the Bung's not being in the middle; tho' if a new Bung was to be bored, and the Dimensions exactly taken, and the Contents computed as for other Casks (a Spheroid) they would be found to be near what follows, viz.

Head.	Bung.	Length.	Full Content.
18.5	22	32.2	48 Wine Gallons.

But, as the said Barrels and Half-Barrels are never imported quite full, therefore some are usually emptied to fill up the rest; and if there is any Part of the Cask remaining which is not used in filling up, the Ullage Content is found by taking the Content of it by the *Diagonal Rule*, (in Plate I. Fig. 13.) and the Bung and Wet Inches as usual, by which find its Ullage, as has been taught in Part I. Page 179, &c.

Nuts.

CHESS-NUTS, *Small-Nuts*, and *Wall-Nuts*, are rated by the Barrel, which is 3 Bushels, and are generally imported loose, but, after having been measured on board by a City-Meter, are put into Bags, containing (generally) one Barrel each, in order to be brought on Shore.

Olives.

OLIVES, if imported in large Casks, must be gauged, but, if in small Casks or Jars, the Contents may be computed; and, according to the present Practice in the Port of London, have an Allowance of $\frac{1}{4}$ Part in Consideration of the Liquor.

Oils.

OILS in certain Casks, 1 in 20 allowed for Leakage; under 10 none.

In Candy Barrels, Tare 29 Pounds per Barrel.

In uncertain Casks, Tare 18 Pounds per Cent.

Note, { 7 $\frac{1}{2}$ Pounds make a Gallon.
252 Gallons make a Ton.

Oils 7 Pounds
and a half to a
Gallon.

Tho' Oils of all Sorts pay Duty by Measure, yet it is not the Practice to gauge them, but if imported in uncertain Casks,

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Casks, they are weighed, and the Gross Weights (after the Deduction of *Draught* and *Tare*) are reduced to Measure by accounting $7\frac{1}{2}$ Pounds to the Gallon: For the Operations whereof take the following Rules.

R U L E the First.

Multiply the *Gross* Hundreds Weight (after Deduction of The first Rule. *Draught*) by the *net* Pounds in one Hundred Weight, after the Deduction of the *Tare*, that is, by 94; and the Product will be the total Net Pounds; or the *Tare* may be deducted from the Gross Weight, and the Remainder be reduced to Pounds.

Which may be multiplied by 2, to bring them into Half Pounds, and divided by 15 the Half Pounds in a Gallon: Or the Net Pounds may be divided by 7.5, Or the Net Pounds and their $\frac{1}{2}$ Part may be added together, and the last Figure towards the Right-hand of the Total cut off. All which Methods will reduce them to Gallons; and those Gallons, being divided by 252, will produce Tons.

Example. Suppose 36 C. Gross after Deduction of *Draught*. An Example. Common Multiplier 94 Net Pounds per Hundred Weight.

$$\begin{array}{r}
 144 \\
 324 \\
 \hline
 468 \\
 1872 \\
 \hline
 23384 \text{ Net Pounds} \\
 \text{add } 1128 \\
 \hline
 252 \overline{) 451.2 \text{ Gallons (1.79 Tons)}}
 \end{array}$$

$$\begin{array}{r}
 252 \\
 \hline
 1992 \\
 1764 \\
 \hline
 2280 \\
 2268 \\
 \hline
 12
 \end{array}$$

Or thus,

$$\begin{array}{r}
 3384 \\
 2 \\
 \hline
 6768
 \end{array}$$

Or thus,

$$7.5 \overline{) 3384.00} (451.2 \text{ Gallons.}$$

$$15 \overline{) 67680} (451.2 \text{ Gallons.}$$

R U L E the Second.

Divide the Gross Hundred Weight (after Deduction of The second *Draught* by 20, and the Quotient will be Tons, esteeming Rule. each 5 Hundred Weight in the Remainder, as 63 Gallons,

PART II.

D d

and

Gauging at the Water-side. Part II.

and each single Hundred Weight, as $12\frac{1}{2}$ Gallons, which being added together, from the Total deduct $1\frac{1}{2}$ Gallons for each Ton, and the Remainder will be the Net Quantity.

An Example.

Example. Suppose 36 C. Gross Weight as before, how many Gallons doth it contain?

Operation.

20) 36 (1 Ton

5) 16 (3 multiply'd by 63

gives 189 Gallons.

12.5

And $\frac{1}{2}$ of 63 = 12.5 201.5 Gallons.

Ton. 201.5 Gallons.

Answer 1 201.5

Train-Oil.

TRAIN-OIL of the *British* Plantations. In uncertain Casks is allowed 18 Pounds per Cent. but in certain Casks, as Barrels, it is the Practice in the Port of London to allow 50 Pounds per Barrel for Tare.

Oils in Jars, &c.

OILS in Jars and Chests: The whole Jars are usually passed at 24, and sometimes at 22 and 26 Gallons each; the whole Chests are usually passed at 8 Gallons each; and the half Jars and half Chests, at half the Quantity of the whole.

Rum.

RUM, Casks of, generally contain these Dimensions, viz.

H. B. L. Cont. Wine Gall.

26.8 32.1 34.3 108

27.2 32. 36.8 116

26.7 32.4 33.6 107

27.4 32.6 33. 108

28. 32.4 34.6 113

26.8 31.7 32.7 101

Wines.

WINES, The Ton to contain 252

The Pipe or Butt 126 } Gallons.

The Hoghead 63 }

The Awm 42 }

Imported in Casks, if enter'd filled, are to be delivered by the Gauge of the Wine contained in the Cask; but if enter'd unfill'd according to the full Gauge of the Cask, tho' there may have been very considerable Leakage.

Outs, what Casks so esteemed.

Every Hoghead of Wine, which shall be run out, and not full 7 Inches, or above, left therein; and every Butt or Pipe, not above 9 Inches, shall be accounted for Outs, and the Merchant to pay no Duty for the same. But such Outs must not be removed from the Keys, till seen and allow'd by the Land Surveyors.

Imported

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Imported in Flasks, or Bottles, Florence Wines, the whole Chest usually contains 40 Flasks, or 60 Betties, and then are passed at 8 Gallons, tho' Part be broken or empty; and the half Chest, containing 20 Flasks, or 30 Betties, at 4 Gallons: But, if they contain more or less Flasks, they must be reduced to that Proportion, being 5 Flasks or $7\frac{1}{2}$ Betties per Gallon.

French, or other Wines, in Flasks, or Bottles are usually passed at 5 Flasks, or Bottles, to the Gallon; but, if upon measuring one or more, they are found to contain more or less, they must be passed according to their real Contents.

If at landing any Wines the Merchant shall refuse to pay or secure the Duties, but is willing to deliver them up to the Crown to be publickly sold, in order to be distilled into Brandy, or made into Vinegar, the Ullage Contents of such Casks as are refused must be taken at the Time of Landing and Delivering up.

And, when the said Wines have been publickly sold, a Certificate, setting forth the whole Proceeding, is to be made out, and signed by the Officers concerned.

CASTILE SOAP, } indouble Serons, about 300 Weight, Tare 30lb. Castile Soap;
 } in single Serons, about 300 Weight, Tare 16lb.
 } in Chests, about $2\frac{1}{2}$ or 300 Weight, Tare 40lb.

CHAP. XXII.

To gauge a SHIP, that is, to find her Burthen or Tonnage.

To perform this, Ship-wrights observe these three Rules.

1. **T**HAT the Dimensions are taken in Feet, and that if First Rule, you measure the Ship within, you shall find her Content or Burthen she will hold or take in:

2. If you take the Dimensions on the Outside, to her light Mark as she swims being unladen, you shall have the Content of the empty Ship. Second Rule.

3. But, if you measure from her light Mark to her full Draught of Water being laden, you shall have the true Burthen of the Ship. And then the Length, Breadth, and Depth, multiplied one into another, and divided by 100 for Men of War (because 100 solid Feet are one Ton) which gives an Allowance for Guns, Masts, Sails, Cables, Anchors, &c. which are all a Burthen, but no Tonnage, the Quotient is her Tonnage. And the Square Root of 100 is 10 the Gauge Point on the Sliding Rule. Third Rule.

D d 2

4. But

Fourth Rule.

4. But for Merchant Men, the Length, Breadth, and Depth in Feet multiplied one into another, and divided by 95, gives her Burthen. And the Square Root of 95 = 9.74 is the Gauge Point on the Sliding Rule.

The true Proportions of NOAH'S ARK were these.

G of vi. 15.

Length of the Keel	300	} Feet.	{	Its Burthen as a
Breadth of the Midship Beam	50			Man of War 4500
Depth in the Hold.	30			Merchant — 4736 $\frac{80}{95}$

The Custom at London.

But at London the Ship-wrights have a Custom of Gauging or Measuring thus: They multiply the Length of the Keel into the Breadth of the Ship at the broadest Place taken from Outside to Outside, and the Product of that by half the Breadth, this Product divided by 94 for Merchant Men, and by 100 for Men of War, the Quotients are the Tons the Ship will carry.

Above Rules liable to Objections.

But none of the above Rules are perfectly true, because two Ships by this Rule, of equal Breadth and Length, shall be of equal Burthen, notwithstanding the Fulness or Sharpness of those Vessels, which may differ their Burthens very much. But the truest Way of gauging a Ship is best done by measuring her as a Piece of Timber of the same Form, and to measure her by Pieces, which Sum of the Particulars in solid Feet added together, and divided as before, gives the Ship's Burthen in Tons*.

The truest Method.

For Practice, I shall add an Example by Pen and Sliding Rule, as follows.

An Example.

Example. Let the Length of a Ship's Keel be 80 Feet, the Breadth 30, and half Breadth or Depth in the Hold 15, I demand its Burthen in Tons?

Operation.

	Operation.
Length	80
Breadth	30
	—
Square	2400
Half Breadth	15
	—

12000

2400

94) 36000 (383 ferè Tons.

By

* N. B. The Law enjoins the ascertaining the Tonnage of Ships in the following Words: "For the preventing Disputes that may arise concerning the Admeasurement of Ships laden with Brandy and other Spirits, or Ships hovering on the Coast, the following RULE shall be observed, viz. Take the Length of the Keel within Board, (so much as the treads on the Ground) and the Breadth within Board by the Midship Beam, from Plank to Plank, and half the Breadth for the Depth, then multiply the Length by the Breadth, and that Product by the Depth, and divide the whole by Ninety-four, and the Quotient will give the true Contents of the Tonnage, according to which Rule the Tonnage of all such Ships and Vessels shall be measured and ascertained, any Law, Custom, or Usage to the contrary in any wise notwithstanding." See 6th Geo. I. Chap. 21.

By the Sliding Rule.

By the Sliding Rule.

A. B. A. B.

1. As 1 is to 80, so is 30 to 2400

Unity. Length. Breadth. 4th Num.

2. As 1 is 2400, so is 15 to 36000.

Unity. 4th Num. Depth. 5th Num.

3. As 94 is to 1, so is 36000 to 383 Tons ferè.

Divisor. Unity. 5th Num. Answer.

But more expeditiously on the Lines C and D by Help of the Gauge Point 9.69.

First find a Geometrical Mean between the Length 80, and Breadth 30, as is taught in Part I. on Page 43, which is 49 nearly.

Now say,

D. C. D. C.

As 9.69 is to 15, so is 49 to 383 Tons.

Gauge Pt. Depth. Mean. Content.

Having the Dimensions of one Ship, together with the Burthen ther. of, to find the Dimensions of another (similar) Ship of any other Burthen, greater or less than the given Ship.

The R U L E.

Divide the Burthen of one Ship by the Burthen of the other, The Rule. (it matters not whether the given Ship's Burthen be greater or less than the Ship required) and extract the Cube Root of the Quotient; multiply the Dimensions of the given Ship by this Cube Root, and the three several Products shall be the Dimensions of the other Ship, if its Burthen be greater than the Burthen of the given Ship: But, if it be less, then divide the Length, Breadth, and Depth in the Hold by the Cube Root of the Difference of their Burthens (as above directed) the three several Quotients are the Dimensions of the other Ship less than the given one.

Example. Let the Length of a Ship's Keel be 45 Feet, the Breadth of the Midship-beam be 17.3, and the Depth in the Hold 8.7 Feet, the Content of this 72 Tons, I demand the Dimensions of another Ship, whose Burthen shall be 360 Tons?

Operation.

Operation.

Burth. Quot. Cube Root.

72.) 360 (5. (1.71 is a common Multiplier.

	Length.	Breadth.	Depth.
	45	17.3	8.7
Multiplier	1.71	1.71	1.71
	45	173	87
	315	1211	609
	45	173	87
Answer	76.95	29.583	14.877
		D d 3	

By

By the Sliding
Rule.

By the Sliding Rule, on the Lines D and E,

First, for the Length of the Keel.
E. D. E. D.
As 72 is to 45, so is 360 to 77.
Content. Length. Content. Length.

Second, for the Breadth of the Midship-beam.
E. D. E. D.
As 72 is to 17.3, so is 360 to 29.5.
Content. Breadth. Content. Breadth.

Lastly, for the Depth of the Hold.
E. D. E. D.
As 72 is to 8.7, so is 360 to 14.9.
Content. Depth. Content. Depth.

Suppose there be given the Mould and Burthen of one Ship, how to find another Ship of the same Mould of any assign'd Burthen, greater or less.

The RULE.

The Rule.

The Length, Breadth, and Depth of the Ship taken in Feet, multiply the Cubes of those Dimensions by as many as you would have the other Ship bigger than the given Ship, and the Cube Roots of these Products are the Answer.

Or,

A second Rule.

If you would have another Ship less than the proposed Ship, then divide the Cube of those Dimensions by 1, 2, 3, &c. the Cube Roots of those Quotients are the Dimensions of the other Ship so much less than the given Ship.

An Example.

Example. Admit a Merchant Ship whose Burden is 72 Tons, the Length of the Keel 45 Feet, the Breadth of the Midship Beam 17.3, and the Depth 8.7, and it is required to build another Ship, whose Burden shall be 5 Times greater than the Ship given, I demand what must be the Dimensions of the Ship required?

Operation.

Length.	Breadth.	Depth.
45	17.3	8.7
45	17.3	8.7
225	519	609
180	1211	696
	173	
2025	299.29	75.69
45	17.3	8.7
10125	89787	52983
8100	209503	60552
	29929	658.503
91125	5177.717	5
5		
455625 (76.9	5	3292.515 (14.877
	25888.585 (29.583	

The several Cube Roots are the Answer. { Length 76.9
Breadth 29.583 } Feet.
Depth 14.877

By the Sliding Rule.

Multiply the Numbers severally one into another on the By the Sliding Lines A and B, and also by 5, as is taught on Page 14; then Rule. set the Lines D and E even, then against the Cube on the Line E is the Root on the Line D.

Example. A Merchant Ship whose Burden is 72 Tons the Length of the Keel 45 Feet, the Breadth of the Midship Beam 17.3, and the Depth 8.7, and it is required to build another Ship whose Burden shall be 2 Times greater than the Ship given, I demand what must be the Dimension of the Ship.

Containing NEW TABLES for a Gauger's Salary at 50 l. per Annum for the common Year, or 365 Days; and for the Leap Year, or 366 Days; with their Explanation, Construction, and Use. Also a TABLE for finding the Number of Days for any Time assigned; with a TABLE of proper Multipliers for Salaries, from 5 to 1000 l. per Annum. By C. LEADBETTER.

Salary at 50 l. the Common Year.

DAYS	JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.	
	L.	S. d. q.	L.	S. d. q.	L.	S. d. q.	L.	S. d. q.	L.	S. d. q.	L.	S. d. q.
1	46	16 11 3:125	0	19 2:0:200	5	4 1:1:95	9	9 0:1:355	13	11 2:3:65	17	16 1:3:325
2	46	19 8:2:310	1	1 11:0:20	5	6 10:0:280	9	11 9:1:175	13	11 2:20	17	18 10:3:145
3	47	2 5:2:130	1	4 7:3:295	5	9 7:0:100	9	14 6:0:360	13	16 8:2:70	18	1 7:2:330
4	47	5 2:1:315	1	7 4:3:25	5	12 3:3:285	9	17 3:0:180	13	19 5:1:255	18	4 4:2:150
5	47	7 11:1:135	1	10 1:2:210	5	15 0:3:105	10	0 0:0:0	14	2 2:1:75	18	7 1:1:335
6	47	10 8:0:320	1	12 10:2:30	5	17 9:2:290	10	2 8:3:185	14	4 11:0:260	18	9 10:1:155
7	47	13 5:0:140	1	15 7:1:215	6	0 6:2:110	10	5 5:3:14	7	8 0:80	12	7 0:3:40
8	47	16 1:3:325	1	18 4:1:35	6	3 3:1:295	10	8 2:2:190	14	10 4:3:26	18	15 4:0:160
9	47	18 10:3:145	2	1 1:0:220	6	6 0:1:115	10	10 11:2:13	13	13 8:5:18	18	0 3:3:345
10	48	1 7:2:330	2	3 10:0:40	6	8 9:0:300	10	13 8:1:195	14	15 10:2:70	19	0 9:3:165
11	48	4 4:2:150	2	6 6:3:235	6	11 6:0:120	10	16 5:1:15	14	18 7:2:90	19	3 6:2:350
12	48	7 1:1:335	2	9 3:3:45	6	14 2:3:305	10	19 2:0:200	15	1 4:1:25	19	6 3:2:170
13	48	9 10:1:55	2	12 0:2:230	6	16 11:3:125	11	1 11:0:20	15	4 1:1:95	19	9 0:1:355
14	48	12 7:0:340	2	14 9:2:50	6	19 8:2:310	11	4 7:3:205	15	6 10:0:280	19	11 9:1:175
15	48	15 4:0:160	2	17 6:1:235	7	2 5:2:130	11	7 4:3:25	15	9 7:0:100	19	14 6:0:360
16	48	18 0:3:845	3	0 3:1:55	7	5 2:1:315	11	10 2:2:10	15	12 3:3:285	19	17 3:0:180
17	49	0 9:3:165	3	3 0:0:240	7	7 11:1:135	11	12 10:2:30	15	15 0:3:105	20	0 0:0:000
18	49	3 6:2:350	3	5 9:0:60	7	10 8:0:320	11	15 7:1:215	15	17 9:2:290	20	2 8:3:185
19	49	6 3:2:170	3	8 5:3:245	7	13 5:0:140	11	18 4:1:35	16	0 6:2:110	20	5 5:3:1
20	49	9 0:1:355	3	11 2:3:65	7	16 1:3:325	12	1 1:0:220	16	3 3:1:295	20	8 2:1:90
21	49	11 9:1:175	3	13 11:2:250	7	18 10:3:145	12	3 10:0:40	16	6 0:1:115	20	10 11:2:10
22	49	14 6:0:360	3	16 8:2:70	8	1 7:2:330	12	6 6:3:245	16	8 9:0:300	20	13 8:1:195
23	49	17 3:0:180	3	19 5:1:255	8	4 4:2:150	12	9 3:3:245	16	11 6:0:120	20	16 5:1:15
24	50	0 18:5	4	2 2:1:75	8	7 1:1:335	12	0 2:230	16	14 2:3:305	20	19 2:0:200
25	0	2 8:3:375	4	4 11:0:260	8	9 10:1:155	12	14 9:2:50	16	16 11:3:125	21	1 11:0:20
26	0	5 5:3:375	4	7 8:0:80	8	2 7:0:340	12	17 6:1:235	16	19 8:2:310	21	4 7:3:205
27	0	8 2:2:190	4	10 4:3:265	8	15 4:0:160	13	0 3:1:25	17	2 5:2:130	21	7 4:3:25
28	0	10 1:2:10	4	13 1:3:85	8	18 0:3:345	13	3 0:0:240	17	5 2:1:315	21	10 1:2:210
29	0	13 8:1:195	4	15 10:2:270	9	0 9:3:165	13	5 9:0:60	17	11 1:135	21	12 10:2:30
30	0	16 5:1:15	4	18 7:2:90	9	3 6:2:350	13	8 5:3:245	17	10 8:0:320	21	15 7:1:215
31			5	1 4:1:275	9	6 3:2:170			17	13 5:0:40		

The Salary Table for the Common Year continued.

DAYS	DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.	
	<i>l. s.</i>	<i>d. q. 365</i>	<i>l. s.</i>	<i>d. q. 365</i>	<i>l. s.</i>	<i>d. q. 365</i>	<i>l. s.</i>	<i>d. q. 365</i>	<i>l. s.</i>	<i>d. q. 365</i>	<i>l. s.</i>	<i>d. q. 365</i>
1	21	18	4	1	135	26	3	3	1	295	34	7
2	22	1	1	0	220	26	6	0	1	115	34	7
3	22	3	10	0	40	26	8	9	0	300	34	7
4	22	6	6	3	225	26	11	6	0	120	34	7
5	22	9	3	3	45	26	14	2	3	395	34	7
6	22	12	0	2	230	26	16	11	3	125	34	7
7	22	14	9	2	50	26	19	8	2	310	34	7
8	22	17	6	1	235	27	2	5	2	130	34	7
9	23	0	3	1	55	27	5	2	1	315	34	7
10	23	3	0	0	240	27	7	11	1	135	34	7
11	23	5	9	0	60	27	10	8	0	320	34	7
12	23	8	5	3	245	27	13	5	0	140	34	7
13	23	11	2	3	65	27	16	1	3	325	34	7
14	23	13	11	2	250	27	18	10	3	145	34	7
15	23	16	8	2	70	28	1	7	2	330	34	7
16	23	19	5	1	255	28	4	4	2	150	34	7
17	24	2	2	1	75	28	7	1	1	335	34	7
18	24	4	11	0	260	28	10	9	1	155	34	7
19	24	7	8	0	80	28	12	7	0	340	34	7
20	24	10	4	3	265	28	15	4	0	160	34	7
21	24	13	1	3	85	28	18	0	3	345	34	7
22	24	15	10	2	270	29	0	9	3	165	34	7
23	24	18	7	2	90	29	3	6	2	350	34	7
24	25	1	4	1	275	29	6	3	2	170	34	7
25	25	4	1	1	95	29	9	0	1	355	34	7
26	25	6	10	0	280	29	11	9	1	175	34	7
27	25	9	7	0	100	29	14	6	0	360	34	7
28	25	12	3	3	285	29	17	3	0	180	34	7
29	25	15	0	3	105	30	0	0	0	000	34	7
30	25	17	9	2	290	30	2	8	3	185	34	7
31	26	0	6	2	110	30	5	5	3	5	34	7

Salary at 50¢ the Leap Year.

DAYS	JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER	
	L.	d. g.	L.	d. g.	L.	d. g.	L.	d. g.	L.	d. g.	L.	d. g.
1	1	366	1	366	1	366	1	366	1	366	1	366
2	2	367	2	367	2	367	2	367	2	367	2	367
3	3	368	3	368	3	368	3	368	3	368	3	368
4	4	369	4	369	4	369	4	369	4	369	4	369
5	5	370	5	370	5	370	5	370	5	370	5	370
6	6	371	6	371	6	371	6	371	6	371	6	371
7	7	372	7	372	7	372	7	372	7	372	7	372
8	8	373	8	373	8	373	8	373	8	373	8	373
9	9	374	9	374	9	374	9	374	9	374	9	374
10	10	375	10	375	10	375	10	375	10	375	10	375
11	11	376	11	376	11	376	11	376	11	376	11	376
12	12	377	12	377	12	377	12	377	12	377	12	377
13	13	378	13	378	13	378	13	378	13	378	13	378
14	14	379	14	379	14	379	14	379	14	379	14	379
15	15	380	15	380	15	380	15	380	15	380	15	380
16	16	381	16	381	16	381	16	381	16	381	16	381
17	17	382	17	382	17	382	17	382	17	382	17	382
18	18	383	18	383	18	383	18	383	18	383	18	383
19	19	384	19	384	19	384	19	384	19	384	19	384
20	20	385	20	385	20	385	20	385	20	385	20	385
21	21	386	21	386	21	386	21	386	21	386	21	386
22	22	387	22	387	22	387	22	387	22	387	22	387
23	23	388	23	388	23	388	23	388	23	388	23	388
24	24	389	24	389	24	389	24	389	24	389	24	389
25	25	390	25	390	25	390	25	390	25	390	25	390
26	26	391	26	391	26	391	26	391	26	391	26	391
27	27	392	27	392	27	392	27	392	27	392	27	392
28	28	393	28	393	28	393	28	393	28	393	28	393
29	29	394	29	394	29	394	29	394	29	394	29	394
30	30	395	30	395	30	395	30	395	30	395	30	395
31	31	396	31	396	31	396	31	396	31	396	31	396

The Salary Table for the Leap Year continued.

DECEMBER.			JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.														
L. S.	d.	q.	L. S.	d.	q.	L. S.	d.	q.	L. S.	d.	q.	L. S.	d.	q.	L. S.	d.	q.												
121	17	13	222	26	1	10	1	66	30	6	6	2	2	16	34	5	9	2	12	38	10	5	3	222	42	12	5	2	12
221	19	10	2	26	4	7	0	120	30	9	3	1	38	34	8	6	1	66	38	13	2	2	276	42	15	2	1	66	
322	2	7	1	38	26	7	3	3	174	30	12	0	1	34	11	3	0	120	38	15	1	1	330	42	17	1	0	120	
422	5	4	1	18	26	10	0	2	228	30	14	9	0	34	13	11	3	174	38	18	1	1	18	43	0	7	3	174	
522	8	1	0	7	26	12	9	1	282	30	17	5	3	34	15	13	8	220	39	1	5	0	22	43	3	4	2	228	
622	10	9	3	16	26	15	6	0	336	31	0	2	2	34	17	15	5	282	39	4	1	3	126	43	6	1	1	282	
722	13	6	2	18	26	18	3	0	44	31	2	11	1	35	2	2	0	336	39	6	10	2	180	43	8	10	0	336	
822	16	3	1	23	27	0	11	3	78	31	5	8	0	35	4	11	0	288	39	7	1	1	234	43	11	7	0	288	
922	19	0	0	28	27	3	8	2	132	31	8	4	3	35	7	7	3	78	39	12	4	0	288	43	14	3	3	78	
1023	1	8	3	32	27	6	5	1	186	31	11	1	3	35	10	4	2	132	39	15	0	3	342	43	17	0	2	132	
1123	4	5	3	30	27	9	2	0	240	31	13	10	2	35	13	1	1	186	39	17	9	3	30	43	19	9	1	186	
1223	7	2	2	8	27	11	10	3	292	31	16	7	1	35	15	10	0	240	40	0	6	2	84	44	2	6	0	240	
1323	9	11	1	13	27	14	7	2	348	31	19	4	0	35	18	6	3	294	40	3	3	1	138	44	5	2	3	294	
1423	12	8	0	19	27	17	4	2	36	32	2	0	3	36	1	3	2	348	40	6	0	0	192	44	7	11	2	348	
1523	15	4	3	24	28	0	1	1	90	32	4	9	2	36	4	0	2	36	40	8	8	3	246	44	10	8	2	36	
1623	18	1	2	30	28	2	10	0	144	32	7	6	1	36	6	9	1	90	40	11	5	2	300	44	13	5	1	90	
1724	0	10	1	35	28	5	6	3	198	32	10	3	1	42	9	6	0	144	40	14	2	1	354	44	16	2	0	144	
1824	3	7	1	42	28	8	3	2	252	32	13	0	0	48	12	2	3	198	40	16	11	1	42	44	18	10	3	198	
1924	6	4	0	96	28	11	0	1	306	32	15	8	3	54	14	11	2	252	40	19	8	0	96	45	1	7	2	252	
2024	9	0	3	150	28	13	9	0	360	32	18	5	2	60	17	8	1	306	41	2	4	3	150	45	4	4	1	306	
2124	11	9	2	204	28	16	6	0	48	33	1	2	1	66	19	5	0	360	41	5	1	2	204	45	7	1	0	360	
2224	14	6	1	258	28	19	2	3	102	33	3	11	0	82	21	3	2	48	41	7	10	1	258	45	9	10	0	48	
2324	17	3	0	312	29	1	11	2	156	33	6	8	0	108	23	5	10	3	102	41	10	7	0	312	45	12	6	3	102
2425	0	0	0	000	29	4	8	1	210	33	9	4	3	124	25	8	7	2	156	41	13	4	0	000	45	15	3	2	156
2525	2	8	3	54	29	7	5	0	264	33	12	1	2	140	27	11	5	1	210	41	16	0	3	54	45	18	0	1	210
2625	5	5	2	108	29	10	1	4	318	33	14	10	1	156	29	14	1	0	264	41	18	9	2	108	46	0	9	0	264
2725	8	2	1	162	29	12	10	3	372	33	17	7	0	182	31	16	9	3	318	42	1	6	1	162	46	3	5	3	318
2825	10	11	0	216	29	15	7	2	426	34	0	3	2	208	33	19	6	3	372	42	4	3	0	216	46	6	2	3	372
2925	13	7	3	270	29	18	4	1	480	34	3	0	2	234	35	22	3	2	426	42	6	11	3	270	46	8	11	2	426
3025	16	4	2	324	30	1	1	0	534	34	6	1	1	260	37	25	0	1	480	42	9	8	8	324	46	11	8	1	534
3125	19	1	2	378	30	3	9	3	588	34	9	3	0	286	39	28	7	9	534	42	12	11	11	378	46	14	5	0	588

Use of the Salary Tables. Part II. The EXPLANATION and USE of the Cash Tables for Salary.

Explanation of
the Tables.

Each Page contains six Columns, and in each Column there are five Rows of Figures; the first on the Left Hand is Pounds, the second Shillings, the third Pence, the fourth Farthings, and the fifth is Fractional Parts of a Farthing, whose Denominator in a Common Year is 365, the Days in the said Year; and the Denominator belonging to those Numerators in a Leap Year is 366, the Days in the said Year.

One Example or two will make all plain.

An Example.

Example. In a Common Year what Salary has an Officer due to him the 25th of July, at 50*l.* per ANNUM?

Look for the 25th of July in the Table for a Common Year, and over-against it you will find 4*l.* 4*s.* 11*d.* 0*q.* : 260, which Fraction is $\frac{260}{365}$, that is, two third Parts of a Farthing.

If the Officer be removed out of one Collection into another, then out of this Salary you are to deduct the Charity*, which is 3*d.* per Pound. Thus by the Rule of Three Direct:

<i>l.</i>	<i>d.</i>	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>q.</i>
If 1	3	4	4	11	1
20		20			
—		—			
20		84			
12		12			
—		—			
4		179			
20		84			
—		—			
240		1019			
4		4			
—		—			
If 960 <i>q.</i>	3 <i>d.</i>	4077 <i>q.</i>			
		3			

960) 12231 (12 *d.*

960

2631

1920

Remains 711

4

960) 2844 (2 *q.*

Answer 1*s.* 0*d.* 2 *q.* $\frac{224}{960}$ Remains 924

Now,

* See the End of Chap. XIX. Part II.

Ch. XXIII. Construction of Salary Tables.

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Now, this 1s. 0d. q. $\frac{2\frac{2}{3}}{365}$ subtracted from the Salary in the Table, viz. 4l. 4s. 11d. $\frac{1}{4}$ ferè, the Remainder 4l. 3s. 10d. $\frac{1}{4}$ $\frac{262740}{365400}$ is the exact Salary that the Officer is to receive the 25th of July at 50l. per Annum; the like observe for any other Day in the Year.

After what I have here said concerning the Use of the Table, for a Common Year, it is needless to trouble the Reader with any Examples of the Use of the Table for the Leap Year, it being in all Respects the same.

The Construction of the foregoing Tables is this :

First, by the single Rule of Three Direct, I find what is the Salary for one Day at 50l. per Annum thus,

Construction of the Table for a Common Year.

D.	l.	D.
If 365	50	1
	20	

365)	1000 (2s.
	730

Remainder	270
	12

	540
	270

365)	3240 (8d.
	2920

Remainder	320
	4

365)	1280 (3q.
	1095

Remainder	185
-----------	-----

Answer 2s. 8d. 3q. $\frac{185}{365}$]

Having thus found that 2s. 8d. 3q. $\frac{185}{365}$ is the Salary due for one Day, which I place over-against the 25th Day of June, (because that is the first Day in the New Year according to the Excise) and adding the same Sum 365 Times, produces the Salary due every Day in a Common Year, as you see it placed in the Table.

Construction of the Table for a Leap Year.

After the same Manner is the second Table calculated for the Salary due each Day in a Leap Year; only, instead of 365, take 366 Days, and then work as before, and the Answer will be 2s. 8d. 3q. $\frac{34}{366}$. But

Be-

Use of the Salary Tables. Part II.

Because these Tables and the Construction thereof are grounded upon *Vulgar Arithmetick*, I will in the next Place shew how to find a *Decimal* which shall be a *Common Multiplier*, and which, being multiplied by any Time respectively, shall produce the *Salary* due for that Time, either for *Days* or *Weeks*; the *Product* being reduced according to Part I. Page 7.

Common Multiplier how found.

The *Decimal* or *common Multiplier* for a Day, &c. is no more than the *Decimal* of 2s. 8d. 3q. $\frac{18}{100}$ for a Common Year; and the *Decimal* of 2s. 8d. 3q. $\frac{54}{100}$ will be a *common Multiplier* for a Day in the *Leap Year*.

The Operation.

The Operation for a Common Year stands thus:

D.	l.	D.
If 365	50	1
	1	
	365) 50.0000000	(.1369863
	365	.....
	1350	
	1095	
	2550	
	2190	
	3600	
	3285	
	3150	
	2920	
	2300	
	2190	
	1100	
	1095	
	Remainder 5	

By the last Operation I find that .1369863 is a *common Multiplier* for a *Gauger's Salary*; which, multiplied by any Number of *Days*, produceth the *Salary* for that Time.

An Example.

Example. What *Salary* is there due to an Officer on the 29th Day of *August* in a *Common Year*?

Ch. XXIII. Use of the Salary Tables.

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The Operation.

Operation.
Common Multiplier .1369863
Number of Days 66
8219178
8219178
Pounds 9.0410958
20

Days 66

Shillings 0.8219160

12

16438320

8219160

Pence 9.8629920

4

Farthings 3.4519680

Answer 9l. 0s. 9d. 3q. .4519680, exactly agreeing with the Table for a *Common Year*.

Note. On Page 456, I have furnished you with two Tables A Note of proper *Multipliers* for *Salaries* at several *Rates per Annum*, the one for a *Common*, and the other for a *Leap Year*.

But if the Officer be removed, &c. out of one *Collection* into another; then when you have multiplied your *Number of Days* by the *common Multiplier* .1369863, multiply that *Product* by this *Decimal* .9875, and it shall deduct you the *Charity* from the *Salary*.

Example. The *Gross Salary* to the 29th of *August* is found to be (either by the Tables, or by the foregoing Operation) 9.0410958, which I multiply by .9875.

By the last Operation I find that .1369863 is a common Multiplier for a Common Year; which, multiplied by any Number of Days, produces the Salary for that Time.

Example. What Salary is there due to an Officer on the 29th Day of August in a Common Year?

See

Operation

See the Work.

First Product 9.0410958
Common Multiplier 9.875

452054790
63287606
723287664
813698622

Pounds 8.92808210250
20

Shillings 18.561642050
12

112328410
56164205

Pence 6.7397046
4

Farthings 2.9588184

Answer 8l. 18s. 6d. 2q. .9588184, is the Officer's neat Salary on the 29th Day of August.

A Note.

Note. If you would know the reason of this Decimal .9875, which will always be a common Multiplier in this Case, it is the Decimal of 19s. 9d. for I deducted 3d. from one Pound, and the Remainder is 19s. 9d. whose Decimal is a common Multiplier, as is shewn before, and the Decimal of one Day's Salary in the Leap Year is thus found:

D. 1. D.
If 366 — 50 — 1

Work according as I have shew'd in Page 450, and you will find the Quotient to be .136612, which is a common Multiplier in this Case.

An Example.

Example. What Salary is there due to an Officer on the 29th Day of February in the Leap Year?

Cast your Eye on the Table for a Leap Year, and you'll find it to be 34l. 3s. 0d. 2q. 324. But

Ch. XXIII. To deduct the Charity.

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To work it *Decimally*, and *deduct* the *Charity*, the *Operation* The *Operation*, stand thus:

June 6	Common Multiplier	.136612
July 31		250
Aug. 31		
Sept. 30		6830600
Oct. 31		273224
Nov. 30		
Dec. 31	Pounds	.34153
Jan. 31	Common Multiplier for Charity	.9875
Feb. 29		
Days 250		170765
		239071
		273224
		307377
	Pounds	33.7260875
		20
	Shillings	14.52175
		12
		104350
		52175
	Pence	6.261
		4
	Farthings	1.044
	33l. 14s. 6d. 1q.	.044.

Note. The Manner of finding the Number of Days may be A *Note*. more expeditiously performed by the *Table* on *Page* 408.

The further Use of these *Salary Tables* will appear in *Case* A further Use of the *Salary Tables*.

Example. Suppose an Officer has received Salary to *August* 11, and on the second of *September* following he is discharged; I demand what Salary he has to receive for that Time in a *Common Year*? An *Example*.

Look into the *Table* for a *Common Year*, and take out the *net Salary* to *August* 11, (that is, by deducting the *Charity*) and I find it to be 6l. 9s. 10d. 1q. .4245952.

Also take out the *net Salary* to *September* 2, and it is 9l. 9s. 4d. 2q. .4108680.

The *Difference* of these two Sums is 2l. 19s. 6d. 0q. .9862728, the *net Salary* then due to the Officer; and so of any other.

These *Tables* I calculated for my own private Use; but now I make them public for the Good of my Country.

PART II.

E e

A T A-

A TABLE for finding the Number of Days for any Time assigned.

Jan. 31.	Feb. 28.	March 31.	April 30.	May 31.	June 30.	July 31.	August 31.	Sept. 30.	Octob. 31.	Nov. 30.	Dec. 31.
Feb. 31.	Mar. 28.	Apr. 31.	May 30.	June 31.	July 30.	Aug. 31.	Sep. 31.	Oct. 30.	Nov. 31.	Dec. 30.	Jan. 31.
Mar. 59.	Apr. 59.	May 61.	June 61.	July 61.	Aug. 61.	Sep. 62.	Oct. 61.	Nov. 61.	Dec. 61.	Jan. 62.	Feb. 62.
Apr. 90.	May 89.	June 92.	July 91.	Aug. 92.	Sep. 92.	Oct. 92.	Nov. 92.	Dec. 91.	Jan. 92.	Feb. 92.	Mar. 90.
May 120.	June 120.	July 122.	Aug. 122.	Sep. 123.	Oct. 122.	Nov. 123.	Dec. 122.	Jan. 122.	Feb. 123.	Mar. 120.	Apr. 121.
June 151.	July 150.	Aug. 153.	Sep. 153.	Oct. 153.	Nov. 153.	Dec. 153.	Jan. 153.	Feb. 153.	Mar. 151.	Apr. 151.	May 151.
July 181.	Aug. 181.	Sept. 184.	Oct. 183.	Nov. 184.	Dec. 183.	Jan. 184.	Feb. 184.	Mar. 181.	Apr. 182.	May 181.	June 182.
Aug. 212.	Sept. 212.	Oct. 216.	Nov. 214.	Dec. 214.	Jan. 214.	Feb. 215.	Mar. 212.	Apr. 212.	May 212.	June 212.	July 212.
Sept. 243.	Oct. 243.	Nov. 246.	Dec. 244.	Jan. 245.	Feb. 245.	Mar. 243.	Apr. 243.	May 242.	June 243.	July 242.	Aug. 243.
Oct. 273.	Nov. 273.	Dec. 271.	Jan. 275.	Feb. 276.	Mar. 273.	Apr. 274.	May 273.	June 273.	July 273.	Aug. 273.	Sept. 274.
Nov. 304.	Dec. 303.	Jan. 306.	Feb. 306.	Mar. 304.	Apr. 304.	May 304.	June 304.	July 303.	Aug. 304.	Sept. 304.	Oct. 304.
Dec. 334.	Jan. 334.	Feb. 337.	Mar. 334.	Apr. 335.	May 334.	June 335.	July 334.	Aug. 334.	Sept. 335.	Oct. 334.	Nov. 335.

The Explanation and Use of the foregoing Table.

This Table is to assist the *Officer* in calculating the *Salary* Use of the fore- due to him, to any Day of his *Removal* from one Collection to going Table. another, or in Case of a *Discharge*.

Example 1. Suppose an *Officer* is removed the 8th Day of *Example 1.* *November* from *Liverpool* to *Worcester*, and has received his *Sal-* *ary* to *September* the 8th last past;

Look on the *Top* of the Table for *September*, and keep your *Eye* down the same Column till you find *November*, and there you will see placed 61; which shews you that there are 61 *Days* from the 8th of *September* to the 8th of *November*, and so of any other Months, and the same Day of the Month.

Example 2. How many *Days* are there from the 29th of *Example 2.* *April* to the 29th of *August*?

Look on the *Top* for *April*, and guide your *Eye* down till you come to *August*, where you will find 122, which are the *Days* from the 29th of *April* to the 29th of *August*; then, be- cause 17 wants 12 of 29, *subtract* 12 *Days* from 122, and there remain 110 *Days*, and so many *Days* there are from *April* 29 to *August* 17 following.

Example 3. I would know how many *Days* there are from *Example 3.* *February* the 14th to *July* the 25th?

Look on the *Top* for *February*, and down the same Column against *July* is 150; (that is, to *July* the 14th) but because I want to know the Number of *Days* from *February* 14 to *July* 25, which is eleven *Days* more, 11 *Days* added to 150 make 161, and just so many *Days* there are from *February* the 14th to *July* the 25th.

Note. When *Leap Year* happens, and *February* is included A *Note*; in the *Days* required, one *Day* more must be added than is in the Table, *February* then having 29 *Days*.

N. B. This Table is useful in computing the Time for *Ser-* *vants Wages*, and for all manner of *Salaries*, of what Time or *Rate* soever.

See likewise the *Example* of the *Salary Tables* following.

30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Dec	Nov	Oct	Sept	Aug	July	June	May	April	March	Feb	Jan	Dec	Nov	Oct	Sept	Aug	July	June	May	April	March	Feb	Jan	Dec	Nov	Oct	Sept	Aug	July	June

Proper Multipliers for Salaries in a Common Year.

Per An.	Per Diem.	Value.			Per An.	Per Diem.	Value.		
l.	Decimals.	l.	s.	d.	l.	Decimals.	l.	s.	d.
5	.013698	0	0	3 $\frac{1}{2}$	90	.246575	0	4	11 $\frac{1}{4}$
10	.027397	0	0	6 $\frac{1}{2}$	100	.273972	0	5	5 $\frac{3}{4}$ fere
15	.041095	0	0	10 fere	120	.328766	0	6	7 $\frac{1}{2}$ fere
20	.054794	0	1	1	200	.547974	0	10	11 $\frac{1}{2}$
25	.068493	0	1	4 $\frac{1}{2}$ fere	300	.821917	0	16	5 $\frac{1}{4}$
30	.082191	0	1	7 $\frac{3}{4}$	400	1.095948	1	1	11
40	.109589	0	2	2 $\frac{1}{4}$	500	1.369863	1	7	4 $\frac{1}{2}$
50	.136986	0	2	8 $\frac{3}{4}$	600	1.643834	1	12	10 $\frac{1}{2}$
52	.142465	0	2	10 $\frac{1}{4}$	700	1.917808	1	18	4 $\frac{1}{4}$
60	.164383	0	3	3 $\frac{1}{4}$	800	2.191896	2	3	10
70	.191780	0	3	10	900	2.465811	2	9	3 $\frac{1}{2}$
80	.219178	0	4	4 $\frac{1}{2}$	1000	2.739726	2	14	9 $\frac{1}{2}$

Proper Multipliers for Salaries in a Leap Year.

Per An.	Per Diem.	Value.			Per An.	Per Diem.	Value.		
l.	Decimals.	l.	s.	d.	l.	Decimals.	l.	s.	d.
5	.013661	0	0	3 $\frac{1}{4}$	90	.245901	0	4	11
10	.027322	0	0	6 $\frac{1}{2}$	100	.273224	0	5	5 $\frac{1}{2}$
15	.040983	0	0	10 fere	120	.327869	0	6	6 $\frac{1}{4}$
20	.054645	0	1	1	200	.546448	0	10	11
25	.068306	0	1	4 $\frac{1}{4}$	300	.819672	0	16	4 $\frac{1}{2}$ fere
30	.081967	0	1	7 $\frac{1}{2}$	400	1.092896	1	10	1 $\frac{1}{4}$
40	.109289	0	2	2 $\frac{1}{4}$ fere	500	1.366119	1	7	3 $\frac{1}{2}$
50	.136612	0	2	8 $\frac{3}{4}$	600	1.639344	1	12	10 $\frac{1}{2}$ fere
52	.142076	0	2	10	700	1.912568	1	18	3
60	.163934	0	3	3 $\frac{1}{4}$	800	2.185792	2	3	8 $\frac{1}{2}$
70	.191256	0	3	9 $\frac{1}{4}$	900	2.459016	2	9	2 $\frac{1}{2}$
80	.218570	0	4	4 $\frac{1}{2}$ fere	1000	2.732240	2	14	7 $\frac{1}{4}$

The Use of the two Tables of Multipliers for Salaries.

Having by the Table on Page 454 found the Number of Days required, those Days multiplied by the proper Factor will give the Salary due.

Example. What Salary is due to an Officer for 40 Days, at 50l. per Common Year? Answer, 5l. 9s. 7d. or $\text{q. } .2624$.

Example. What Salary is due to a Supervisor for 45 Days, at 90l. per Leap Year? Answer, 11l. 1s. 3d. or $\text{q. } .9202$.

CHAP. XXIV.

A LIST of the Commissioners of his Majesty's Royal Revenue of Excise, &c. in England, and other Officers employed therein, with their respective Salaries.

Note, The Officers and Salaries in the following List are generally the same, but the Officers by Death and Removals are frequently changing.

		l.	s.	d.
N INE Commissioners of Excise, each 1000 <i>l.</i> per Annum, viz.		9000	0	0
William Burton, Esq;	Thomas Bowlyby, Esq;			
John Windham Bower, Esq;	Richard Bagot, Esq;			
David Papillion, Esq;	Sir Henry Poole, Bart.			
William Cayley, Esq;	George Quarme, Esq;			
George Lewis Scott, Esq;				
Four Commissioners of Appeals, each 200 <i>l.</i> per Annum		800	0	0
Robert Coney, Esq;	John Conslade, Esq;			
Francis Hales, Esq;	Marmaduke Sowle, Esq;			
Secretary to the Commissioners of Excise 725 <i>l.</i> per Annum	Stamp Brooksbank, Esq;	725	0	0
His first Clerk, 100 <i>l.</i> per Annum	Thomas Ball, Esq;	100	0	0
His second Clerk, 60 <i>l.</i> per Annum	Edward Rumsey, —	60	0	0
His third Clerk, 40 <i>l.</i> per Annum	Thomas Ball, jun. —	40	0	0
Solicitor to the Commissioners of Excise, for himself and Clerk,	Dudley Baxter, Esq;	610	0	0
Register to the Commissioners of Excise, 450 <i>l.</i> per Annum	Giles Merryfield, —			
Three Clerks to Ditto, each 80 <i>l.</i> per Annum	Thomas Ryder, Esq;	450	0	0
Register to the Commissioners of Appeals, 100 <i>l.</i> per Annum	Philip Milton, Esq,	240	0	0
Messenger, and Door-keepers, each 40 <i>l.</i> per Annum		100	0	0
Correspondent to the Commissioners of Excise, 220 <i>l.</i> per Annum		80	0	0
His first Clerk 65 <i>l.</i> per Annum				
His second Clerk 56 <i>l.</i> per Annum		220	0	0
Clerk to the Securities 200 <i>l.</i> per Ann.	Thomas Rumsey, Esq;	121	0	0
Three Assistants to the first 70 <i>l.</i> per Annum,		200	0	0
second and third 50 <i>l.</i> per Annum each,		170	0	0
Ditto				

Carried forward 12916 0 0

The Excise List.

Part II.

		l.	s.	d.
Clerk of the <i>Diaries</i> , 100 <i>l.</i> per Annum		Brought forward	12916	0 0
Affittant to Ditto, 50 <i>l.</i> per Annum		<i>William Lister</i>	100	0 0
Store keeper, 120 <i>l.</i> per Annum			50	0 0
Clerks to Ditto, { first, at 70 <i>l.</i> per Ann. second at 40 <i>l.</i> per Ann.		<i>Grosvenor Bedford</i>	120	0 0
Packer in the Store-keeper's Office, 50 <i>l.</i> per Annum			110	0 0
General-Accomptant of <i>Excise</i> , 260 <i>l.</i> per Annum			50	0 0
Clerk for entering the <i>Bills of Exchange</i> , 100 <i>l.</i> per Annum			260	0 0
Accomptant for the <i>London Distillery</i> , 250 <i>l.</i> per Annum			100	0 0
Two Affittants to Ditto, 50 <i>l.</i> per Annum		<i>Mungo Haldane</i>	250	0 0
Two Accomptants for the <i>London Brewery</i> , { first, at 120 <i>l.</i> second, at 80 <i>l.</i>			100	0 0
Two, as <i>Excise</i> Accomptants and for the <i>Weekly Distribution</i> , { first at 80 <i>l.</i> second at 30 <i>l.</i>			200	0 0
Five Accomptants for <i>Excise</i> each 80 <i>l.</i> per Ann. and 20 <i>l.</i> per Ann. for <i>Civil List</i> Tax on Salaries, at 6 <i>d.</i> per l. to <i>Thomas Young</i> , }			110	0 0
			420	0 0

Malt and Hops.

General Accountant for the said } Duties, 250 <i>l.</i> per Annum	Nath. Simon	250	0	0
Accountant for Malt, 80 <i>l.</i> per Annum	—	80	0	0
Four Assistant-Accountants for Malt, each 70 <i>l.</i> per Annum	—	280	0	0
Accountant for Hops and Coaches, 200 <i>l.</i> per Annum	Gul. Bruere	200	0	0
Assistant to the Excise and Malt General Accountants, 50 <i>l.</i> per Annum	—	50	0	0

New Duties.

General Accountant for the Duties on Candles, Soap, Paper, Callicoes, Gold and Silver Wire and Starch 200l.	Fr. Marshall	—	200	0	0
General Accountant for New-Place , 200l.	Richard Paton	—	200	0	0
	Carried forward	£	16046	0	0

			<i>l.</i>	<i>s.</i>	<i>d.</i>
		Brought forward	16046	0	0
Two Accomptants for	} <i>first at 90 l.</i>	}	—	110	0 0
<i>Candles in Town and</i>					
<i>Country, and for the</i>	} <i>second at 20 l.</i>	}	—	—	—
<i>Bank of Charity.</i>					
Assistant-Accomptant for <i>Candles in Town, 70 l. per Annum</i>			—	70	0 0
<i>Ditto for Soap, Paper, Callicoës, Wire, and Starch,</i>	}	}	—	70	0 0
<i>in Town, 70 l. per Annum</i>					
<i>Ditto for Country Callicoës, Wire and Starch, 70 l.</i>	}	}	—	70	0 0
<i>per Annum</i>					
<i>Ditto for Country Soap, 70 l. per Annum</i>			—	70	0 0
<i>Ditto for Country Paper, 50 l. per Annum</i>			—	50	0 0
Clerk of the <i>Entries for the said Duties, 65 l.</i>	}	}	—	65	0 0
<i>per Annum</i>					

Hides, Coffee, Tea, and Chocolate.

General-Accomptant for <i>the said Duties, 220 l.</i>	}	<i>T. Stevenson</i>	220	0	0
<i>per Annum</i>					
Six Assistants Accomptants for Duty on Hides and Skins,	}		—	350	0 0
Vellum and Parchment, Coffee, Tea, and Chocolate,					
<i>Town and Country</i>					
<i>First, 80 l. per Annum</i>					
<i>Second, 70 l. per Annum</i>					
<i>Third,</i>					
<i>Fourth,</i>	}	}	50 l. per Annum each.	—	—
<i>Fifth,</i>					
<i>Sixth,</i>					
<i>Sixth,</i>					
Comptroller of Excise, &c. for himself, <i>exclusive of his</i>	}	}	775	0	0
<i>Clerks 775 l. per Annum</i>					
His Deputy, <i>400 l. per Annum</i>			400	0	0
For Entering <i>Bills of Exchange, &c. 120 l.</i>	}	}	120	0	0
<i>per Annum</i>					
<i>On Excise, 120 l. per Annum</i>			120	0	0
Three on <i>Excise, each 80 l. per Annum</i>			240	0	0
Two on <i>Malt, each 60 l. per Annum</i>			120	0	0
Carried forward			£ 18896	0	0

		Brought forward		1880	6	0	0
On Candles and Viſtuallers in Town,	65 l.	}					
per Annum							
On Hops and Candles in the Country,	60 l.	}					
per Annum							
Three for Soap, Paper, Callico, Wire and Starch, in Town and Country, each	60 l. per Annum	}					
Two for Hides, and Skins, Vellum, and Parchment, in Town and Country, each	60 l. per Annum	}					
For Coffee and Tea,	50 l. per Annum				50	0	0
For Chocolate	50 l. per Annum				50	0	0
Cafhier, or Receiver-General of Excise, &c. for himself and Clerks,	2500 l. per Annum	}	Sir William Milner, Benjamin Storr, Esq; 1st Clerk				2500
Four Tellers, or Deputy Receivers,	1st, 100 l. per Annum 2d, each 80 l. per Annum. 3d, 4th, each 40 l. per Annum.	}	Daniel Cottrell, Thomas Byreton, Stephen Montague				340
Four Aſſiſtants and Notary Public Clerks,	1st, 100 l. per Annum 2d, 60 l. per Annum 3d, each 40 l. per Annum 4th, each 40 l. per Annum	}					240
Three Bill-Men, each	40 l. per Annum						120
Comptroller of the Cuſt, for himself and two Clerks,	800 l. per Annum	}	Sir Richard Temple, Bart.				800
Auditor of Excise, &c. for himself, Deputy and five Clerks,	1240 l. per Annum	}	John Fowle, Esq;				1240
Auditor of Hides, Coffee, Tea, and Chocolate, for himself and two Clerks,		}	Charles Steward, Esq;				400
Two General Examiners of the Excise and Mal Officers	Country Books, 1st, 150 l. 2d, 100 l. per Annum.	}	Richard Richardson, William Rollinson				250
Fourteen Aſſiſtants for examining the said Books,	each 60 l. per Annum	}					840
Aſſiſtant to the General-Examiners for Sorting the Books,	30 l. per Annum	}					30
				Carried forward			
				1816	2	6	0

			l.	s.	d.
	Brought forward	26181	0	0	
Chief Examiners of Town Officers					
Books for London-Brewery, 90l. per Annum.	Samuel Higs	90	0	0	
Two Assistant-Examiners of the said					
Books, each 60 l. per Annum	James Adams	120	0	0	
	George Jones				
General Inspectors	William Newby, Brewer, 160 l.				
	Thomas Stephens, Distiller, 150 l.	430	0	0	
	Anthony Walker, Can. Surveyor, 120 l.				
General Surveyors of					
Excise, Hides, Coffee, Tea, and Victuallers, 160 l. per Annum	Benjamin Hutchins				
Candles, Coffee, &c. 145 l. per Annum	Dan. Cabusac	720	0	0	
Excise, Coffee, Tea, &c. 145 l. per Annum	Israel Court				
Soap only, 145 l. per Annum	John Jackson				
Coffee, Tea, &c. 125 l. per Ann.	David Parish				
	Giles Powell				
	Charles Moody				
	Richard Newby				
	John Hildyard				
	John Dell				
Thirteen Surveyors in the London-Brewery, each 80 l. per Annum	Richard Wood	1040	0	0	
	Edward Grimstone				
	Joseph Reeves				
	Charles Atkins				
	Matthew Turner				
	George Dixon				
	Samuel Clark				
	Joseph Wagster				
In the London Brewery					
26 Principal Officers, each 60 l. per Annum		1560	0	0	
59 Officers, each 52 l. per Annum		3068	0	0	
38 Assistants, each 40 l. per Annum		1520	0	0	
Distillery.					
Four General Surveyors of the Distillery, each 100 l. per Annum	Matthew Finley				
	Henry Denton				
	Laurence Parker	400	0	0	
	Edward Cooksey				
Eleven Surveyors in the London Distillery, each 80 l. per Annum		880	0	0	
Fifty-two Officers in Ditto, each 52 l. per Annum		2704	0	0	
Twenty Assistants in Ditto, each 40 l. per Annum		800	0	0	
Collector of the Duties on imported exciseable Liquors, at the Port of London, 120 l. per Annum		120	0	0	
	Carried forward	£ 39633	0	0	

			<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought forward		39633	0	0	0
Port-Surveyor for the Distillery, Malt, Coffee, Tea, and Chocolate, 90 <i>l.</i> per Annum		90	0	0	0
Land-Surveyor of Imported Liquors, 80 <i>l.</i> per Annum		80	0	0	0
Twelve Surveyors in the Brandy, each 60 <i>l.</i> per Annum		720	0	0	0
In the Brandy, } Fifty two Officers, each 50 <i>l.</i> per Annum		2600	0	0	0
Coffee, Tea, &c. } Twelve Assistants, each 40 <i>l.</i> per Annum		480	0	0	0
Two Port Gaugers, each 60 <i>l.</i> per Annum		120	0	0	0
Two Port Officers, each 50 <i>l.</i> per Annum		100	0	0	0
Four Tide Surveyors, each 60 <i>l.</i> per Annum		240	0	0	0
Warehouse-keeper, at 60 <i>l.</i> per Annum		60	0	0	0
Chief Examiner of the London Distillery Officers Books, 90 <i>l.</i> per Annum	John Keith	90	0	0	0
Three Assistants { First 60 <i>l.</i> per Annum		160	0	0	0
{ Second 50 <i>l.</i> per Annum					
{ Third 50 <i>l.</i> per Annum					
Eighteen Permit-Writers, in Excise, Coffee, Tea, &c. each 60 <i>l.</i> per Annum		1080	0	0	0
Chief Examiner of the Permits, 80 <i>l.</i> per Annum		80	0	0	0
Five Assistants to ditto, each 60 <i>l.</i> per Annum		300	0	0	0
Eight Surveyors in the Soap, and Candles, each 80 <i>l.</i> per Annum		640	0	0	0
Fifty-one Officers in Candles and Soap, each 50 <i>l.</i> per Annum		2550	0	0	0
Thirty-four Assistants in Candles and Soap, each 40 <i>l.</i> per Annum		1360	0	0	0
Chief Examiner in the said Duties, 80 <i>l.</i> per Annum		80	0	0	0
Three Assistants to ditto each 55 <i>l.</i> per Annum		165	0	0	0
Two Callicoe-Surveyors, each 60 <i>l.</i> per Annum		120	0	0	0
Three Officers in the said Duties, each 50 <i>l.</i> per Annum		150	0	0	0
Two Officers in Paper, each 50 <i>l.</i> per Annum		100	0	0	0
Two Officers in Wire, each 50 <i>l.</i> per Annum		100	0	0	0
One Assistant to ditto, at 40 <i>l.</i> per Annum		40	0	0	0
Four Officers in Starch, each 52 <i>l.</i> per Annum		208	0	0	0
Six Officers in Hides, each 50 <i>l.</i> per Annum		300	0	0	0
One Assistant in ditto, at 40 <i>l.</i> per Annum		40	0	0	0
Twenty-one Officers in Coffee and Tea, each 50 <i>l.</i> per Annum		1050	0	0	0
Two Port Officers in ditto, each 50 <i>l.</i> per Annum		100	0	0	0
Surveyor, for Gold and Silver Wire, 70 <i>l.</i> per Ann.		70	0	0	0
Surveyor of the Hides, 80 <i>l.</i> per Annum		80	0	0	0
Examiner of Town Officers Books for Hides, at 65 <i>l.</i> per Annum		65	0	0	0
Carried forward		53051	0	0	0

l. s. d.
Brought forward 53051 0 0

Coffee, Tea, and Chocolate.

Inspector General of the said Duties, } 500l. per Annum	Ja. Geo. Williams, Esq; 500 0 0	
Register of the Chocolate Stamps, 80l. } per Annum	— — —	80 0 0
Clerk of the Entries, 60l. per Annum	— — —	60 0 0
Stamper of Labels for the Chocolate, 50l. per Annum	— — —	50 0 0
Three Pastors for fixing on the Labels, each 50l. per Annum	— — —	150 0 0
Two Surveyors of the Coffee-Roasting } Houses, each 80l. per Annum	— — —	160 0 0
Two Surveyors of the Warehouses for } Coffee and Tea, each 80l. per Annum	— — —	160 0 0
Six Warehouse-keepers, each 60l. per Annum	— — —	360 0 0
Warehouse-keeper of Condemned Goods } at the Excise-Office, 40l. per Annum	— — —	40 0 0
Six Lockers at the Tea Warehouses, each 30l. per Annum	— — —	180 0 0
Three Surveyors of the great Dealers in } Coffee, Tea, &c. each 70l. per An.	— — —	210 0 0
Twenty-one Officers, each 50l. per Annum	— — —	1050 0 0
Six Permit-Writers, each 60l. per Annum	— — —	360 0 0
One Ditto, 50l. per Annum	— — —	50 0 0
Three House-keepers at the Roasting-house each 40l. per Annum	— — —	120 0 0
Eleven Coffee-Roasters, at ditto	— — —	440 0 0
Twelve Watermen, each 30l. per Annum	— — —	360 0 0
Thirty-six Tidemen, at 3 s. per Diem.	— — —	
Six Lockers for the Customs, at 1 s. 6 d. per Diem.	— — —	
Six Warehouse-keepers, each 60l. per Annum	— — —	360 0 0
Two Port Officers for the Inland Duties, each 50l. per Annum	— — —	100 0 0
Register of the Victuallers within the Weekly Bills of } Mortality, and Accountant for Impres Money } for paying of Incidents, at 80l. per Annum	— — —	80 0 0
Six Messengers, each 50l. per Annum	— — —	300 0 0
House-keeper, of the Excise-Office, 200l. per Annum	— — —	200 0 0
Deputy House-keeper, 120 per Annum	— — —	120 0 0
Two Door-keepers to } the Commissioners } of Excise, } R. Hollingsworth } Thomas Cock }	— — —	140 0 0
Porter of the Excise-Office, at 40l. } per Annum	Samuel Rolls	40 0 0

Carried forward £ 58721 0 0

Brought forward		58724	00
Six Watchmen at the Excise-Office, each 40l. per Annum		240	00
Yard-keeper and Fire-maker, 40l. per Annum		40	00
Stable-keeper, 50l. per Annum		50	00
Rent paid for the Excise-Office 400l. per Annum, to	Sir William Milner	400	00

There are 49 Collectors in the several Counties in England, at a Salary of 120l. per Annum each; and one a Supernumerary at 80l. per Annum, besides an Allowance for Riding-Charges } 5960 00
And 190 Supervisors, who are set over and inspect the } 17100 00
several Officers in the Country, at a Salary of 90l. per }
Annum, besides an Allowance for Riding-Charges, }
Most Collectors have a Clerk and Supernumerary Officer in every Collection.

There are about 2700 common Officers employed in the } 13500 00
several Parts of England, each at 50l. per Annum }

The Licence and Coach Office.

The Principle, at 190l. per Annum	190	00
First Clerk, at 60l. per Annum	60	00
Second Clerk, at 50l. per Annum	50	00

There are also 217811 00

N. B. Three-pence in the Pound is deducted for Charity from all Officers of Excise, Clerks, &c. which are put into their Places by the Commissioners; by which means 14 or 1500l. are raised every Year, which Money is applied for the Support of old decayed or disabled Officers of Excise, who have served upwards of seven Years; and they are allowed per Annum, viz.

An Accomptant-General	50	00
A Collector	25	00
A Clerk	20	00
A Supervisor	20	00
A Gauger	10	00

N. B. This Charity is remitted to them Gratis wherever they are; and they are paid Half-yearly.

Here follows an APPENDIX, containing many useful Hints and Observations for the Benefit of the Young Officer.

APPEN-



A P P E N D I X.

BY the Act of Parliament (*viz.* 12 Car. II. Chap. 24.) whereby the Duties of Excise were first granted, it is directed there should be paid the several Duties; *viz.* For every Barrel of Beer or Ale brewed by the Common Brewer, or any other Person, who doth or shall sell or tap out Beer or Ale, publicly or privately, so much per Barrel, and so proportionably: So that the Duty of Excise* becomes a Debt vested in the Crown, as soon as the Operation

* For the better charging and collecting those Duties, Common Brewers, &c. liable thereto, were required to do and perform several Things, and forbid the doing other Things, under several and respective Penalties and Forfeitures in the said Act mentioned; and for the more easy recovering those Penalties and Forfeitures, the said Act established a Jurisdiction in Justices of the Peace, which at that Time was entirely new. But the Jurisdiction erected by the aforesaid Act is not limited or confined to the nearest Justices; but it has given this Power and Jurisdiction to any two or more Justices residing near to the Place where Forfeitures shall be made, or Offences committed, &c. and not having ascertained or expressed, what Nearness is thereby meant or intended, it is reasonable to infer that the adding these words *residing near*, &c. is only to intimate, that the Parties should not unnecessarily be obliged to take very long Journeys.—When any Forfeiture or Offence against these Laws is made or committed in any Town, not being a County of itself, or in any Corporation where some of the Magistrates are Justices of the Peace, such Forfeiture or Offence may be heard and determined, either by Two or more of the Justices of the Peace of the County, where such Town or Corporation is, or by Two or more of the Justices of such Town or Corporation, or by one of the County-Justices, and One of the Justices of such Town or Corporation accordingly, as the Informer shall lay and exhibit his Information; notwithstanding that in the Charters of some Corporations there are Clauses for excluding all other Justices of the Peace, except the particular Justices of such Corporation, from acting in Matters of the Peace arising and happening within such Corporation; Yet for this Purpose the Country Justices may meet and sit at and in such Corporations.—Justices of the Peace, (since the making the aforesaid Act) it may be observed, are to be considered as Persons having two Capacities of distinct and different Kinds; the one, their Ancient and Original Jurisdiction; and the other, their New Additional Jurisdiction: In all Cases of such Sort it is a standing Rule, that, if two different Capacities concur and center in one Person, yet those Capacities remain and continue as distinct and separate, as if they were in two different Persons.—But no Charter is or can be sufficient to overrule the express Words of an Act of Parliament; and, the aforesaid Act having expressly given this Jurisdiction to any two or more Justices residing near, no Charter can confine or restrain that Jurisdiction to the particular Justices of a Corporation, so as to exclude the other Justices near to the respective Places where these Offences happen to be committed.—And therefore it is at the Election of the Informer or Prosecutor to lay his Information before any Two or more Justices, as are not very remote from the Place where such Offence is committed. But, after he hath so exhibited his Information before any Two or more Justices of the Peace, the hearing and determining such particular Information will thereby be vested in, and confined to those particular Justices; but if the two Justices, before whom such Information is so exhibited, upon hearing the Evidence, do happen to differ, and if one be for Convicting, and other for Acquitting, and both should desire a third Justice to join with them, in order to have a Determination, yet such Third Justice cannot regularly so join with them, because the Record of that Proceeding being before them Two only, if any other should take upon him to join with them therein, he would then take upon him to judge of and in a Matter which is not regularly before him: And in such Case the Informer or Prosecutor may in Writing or otherwise declare, That he will not proceed any further upon such his Information exhibited before such two Justices, saving to himself a Right for exhibiting another Information for that Offence; and then the said Two Justices may thereupon make a Record of such his relinquishing the farther Proceeding on that Information, which thereby will be discharged, and the Case will then be as if no Information had been exhibited; and then, if the three Months are not expired, the Informer may exhibit the like Information, before Two or Three other Justices, or before the first Two, and one or Two more joined with them: But so long as the Cause stands upon the Foot of the first Information, exhibited before Two Justices

tion of Brewing is over, without any regard had to the disposing thereof. Likewise the Excise of Nine-pence for every Bushel of Malt, *which shall be made*. The Duties of Excise on Candles are charged in the like manner.—For all Candles *made*.—For all Soap *which shall be made*. In all which Cases, the Excise accrues and becomes a Debt vested in the Crown, upon the *making* the said Manufactures. But the Excise upon Cyder accrues otherwise, for 10s. 8d. *per* Hogshead is laid upon Cyder *made and sold*. So that this does not accrue until the Cyder is *sold*. But by the Malt-Act, a farther Excise of 4s. *per* Hogshead is laid on all Cyder *made for Sale* or not; and this duty accrues at the Times when the Cyder is made. The Excise on Metheglin and Mead being laid upon these Liquors when *sold*, the Duty does not accrue until they are *sold*. Duties of Excise are laid upon several other Manufactures; as upon the *printing and painting* Paper to serve for Hangings, &c. and upon the *printing, painting, staining or dying* Silks, Callicoes, Linens or Stuffs; which Duties become Debts vested in the Crown, upon the performing the said Operations, or any of them.—But tho' the said Duties become Debts vested in the Crown, upon the performing the Operations of Making or Improving as aforesaid; yet there are distant Times allowed for the paying the same, which are to be computed from the Times the Manufacturers make, or ought to have made Entries of the Manufactures so made or improved; and which Times for the making such Entries are as follow, *viz.* Common Brewers are once in every Week to make true and particular Entries of all Beer and Ale, which they shall brew in that Week; and, if they neglect to make such Weekly Entry, they forfeit Ten Pounds for every such Weekly Neglect. Every Common Brewer, who shall not pay and clear off the Excise within a Week after he made or ought to have made his Entry, shall pay double the Value of the said Duty of Excise. If then a Common Brewer begins his Trade on the Second Day of any Month, and breweth one Guile or Brewing on that Day, and another Guile or Brewing on the Fourth Day of that Month, and another on the Sixth Day of that Month, such Brewer ought, on or before the Eighth Day of that Month, to make a true and particular Entry of all he brewed in such Week; and, if he does not, he forfeits Ten Pounds, and an Information † may be laid against him

Justices only, no other Justices can join with them in giving Judgment thereupon. But if such first Information is so withdrawn, it will not afterwards be of any Use *to save* the three Months limited for the laying these Informations. So far as this Act of the 12 Car. II. relates to the Jurisdiction of Justices of the Peace in these Causes, it is, in Fact, a beneficial Law both to the Crown and to the Subject. For, if instead of this *summary* Way of Proceeding, such Prosecution had been left to the usual Ways of Proceeding in the Courts of *Westminster*, the Expences of such Prosecutions would very much have lessened the net Produce of these Revenues; and the necessary Attendance, Loss of Time; and Expences in defending such Prosecutions, would in many Cases have been a far greater Tax than the Duties themselves, and would sometimes have been the utter Ruin of many Defendants; and therefore *this* Act of Parliament, so far as it relates to the Jurisdiction of Justices of the Peace in these Cases, ought to be construed as favourable and as extensive as in the Case of any other beneficial Laws.

† It should be observed, that it will not be proper to make the Finders out or Discoverers of Practices contrary to the Excise Laws Informers, or to lay Information in their own Names, lest thereby it should happen, that there may be a Want of Evidence to prove the Offence laid in such Information; for the same Person cannot be both Informer and Witness: For which Reason these Informations should be laid in the Name of the Collector, or of some other Person not concerned in the discovering or finding out the Offence.

him for it in the Beginning of the Second Week, *viz.* the Week next following the Week he so first began to brew; and he ought to pay and clear off Duties accruing

Offence. But if the Collector himself happeneth to find out any Practice or Offence, for which Information is to be laid, by all Means let such Information be laid in the Name of the Supervisor, or of some such other Person as is not concerned in such Discovery, and that is not to be made Use of as a Witness to prove the Offence or any Thing relating to it.—No Information is to be prosecuted against a Common Brewer, &c. for any Mifentry, unless it be laid before the Justices of the Peace, within three Months next after the Offence is committed. But it is to be observed, that such three Months are not to be *Calendar or Almanack Months*, but *Lunar Months of four Weeks to a Month*, and no more; according to which Computation, eighty-four Days make up the three Months: And therefore, if Informations of this Kind are not laid before Justices of the Peace within such eighty-four Days next after the committing the Offence, they then come too late.—But there are some Offences, which in their Nature are continuing Offences, *viz.* If any common Brewer, Victualler, or Retailer of Beer, &c. hide, conceal, or convey away any Beer, from the Sight and View of the Gauger, they respectively forfeit Twenty Shillings, for every Barrel so hid, or concealed or conveyed away: And if a common Distiller or Maker of Low Wines, Spirits or Strong Waters for Sale, hide or conceal such Low Wines, &c. from the Sight and View of the Gauger, he forfeits five Shillings for every Gallon so hid, concealed, or conveyed away.—By the Acts relating to the respective Duties upon other Liquors, Goods, and Manufactures, charged with Duties, there are likewise certain Penalties for hiding and concealing; and it is to be observed, that the Offence of hiding and concealing doth not consist barely in the first Act of hiding and concealing, but it is a continuing Offence: For, when any Thing is once hid and concealed, it remains so, until it is either produced or discovered, or otherwise disposed of: And therefore, if a common Brewer on the first Day of March hides, conceals, or conveys away one or two Barrels of Ale or Beer, and afterwards keeps the same hid until the End of July following; and if then, and not before, the same shall be discovered and found actually hid and concealed until that Time, and that an Information shall then be laid against such Brewer, for such hiding and concealing; the Information would be well, as to the Time of laying it, and would be within the three Months, notwithstanding it would then be above three Months from the first hiding, because whatever is once hid and concealed, and is kept and continued so hid and concealed, and is afterwards found and discovered so hid and concealed, is, and remains hid and concealed during all that Time; and, in the Case before supposed, the Brewer did as much hide and conceal such Drink, the very Day when the same was found so hid and concealed, as he did the first Day it was hid and concealed: For hiding and concealing any Thing does not consist barely in the first putting or laying such Thing out of Sight, in this or that private Place, for such putting or laying thereof is only the Means made use of to hide and conceal it; but the hiding and concealing consisteth in the keeping such Thing undiscovered; and therefore, until such Drink is discovered, it is as much hid and concealed, as it was the first Day it was put or laid in such private Place; and for which Reason such Information, laid within three Months next after such finding and discovering such Drink, will be within three Months next after the hiding and concealing thereof.

The Law made 12 Car. II. did not expressly direct, That the Forfeitures and Offences against it should be heard and determined IN the respective County or City where the same shall happen to be committed.—But by another Law, made the 15th of the said King, it is enacted, “*That all Differences, Appeals and Complaints, that shall happen and arise between Party and Party, in order to the Payment of the Duty of Excise, shall be heard and determined by the proper County, or in the several Ridings and Divisions of Yorkshire and Lincolnshire, where they shall arise, and not elsewhere.*” So that all Forfeitures and Offences against these Laws are now to be heard and determined in the proper County where they happen. Most Cities are Counties of themselves, distinct from the County or Counties surrounding or adjoining to them: As London is a County of itself, and is no part of the County of Middlesex; and the like may be observed concerning several other Towns; as the Town of Poole, though encompassed by the County of Dorset, yet it is really a County of itself, distinct from the County of Dorset: The Towns of Nottingham, Southampton, New-Castle upon Tyne, Kingston upon Hull, and Town of Carmarthen, are each of them Counties of themselves, distinct from the Counties surrounding or adjoining to them: The Borough of Leicester is also distinct from the rest of that County. So that Forfeitures and Offences against these Laws, happening within any of these Towns, must be heard and determined IN these

accruing in the first Week, at or before the End of the Second Week; and, if he does not do it, an Information for double the Value of the Duties, which so accrued in the first Week, may be laid against him in the Beginning of the third Week, computed from his first commencing a Brewer. Notwithstanding Common Brewers are not commonly held to make their Payments so soon, yet it is plain, That at the End of each Week they should enter all they had brewed in that Week, the Words of the Act being, *That all Common Brewers shall once in every Week make true and particular Entries.* So that if a Common Brewer do not in the first Week make an Entry of what he brewed in that Week, but delay the doing it till the next Week after, it is plain, that he passes over one Week without making any Entry, and therefore he does not in every Week make a true Entry, which the Law requires him once in every Week to do. Inn-keepers, Victuallers, and Distillers are once in every Month to make true and particular Entries of their Liquors; and if they neglect so to do, Inn-keepers for every Neglect, forfeit Five Pounds; and Victuallers, for every Neglect, forfeit Twenty Shillings; and, if in one Month more they do not pay and clear off

these Towns respectively; but this is not by reason either of their being *Corporations*, or of any excluding Clauses in any of their *Charters*, but because they are *distinct Counties* of themselves. *¶* Although some Cities are Counties of themselves, yet all Cities are not so; *Westminster* is in, and Part of, the County of *Middlesex*; and so *Hereford*, *Oxford*, and *Durham*, are in, and are, Part of the respective Counties of *Hereford*, *Oxford*, and *Durham*. The City of *Carlisle* is also Part of the County of *Cumberland*; and the City of *Rochester* is likewise Part of the County of *Kent*: But, for your Direction in this Particular, you are to observe this Rule, That such Cities or Towns as have a *Sheriff* or *Sheriffs* of their own, separate and distinct from the County-Sheriff, are Counties of themselves; but such Cities or Towns as have no Sheriff or Sheriffs of their own, are in and Part of the respective Counties where they are situate. — It may be worth your farther Observation, That tho' it may be several Cities are Counties of themselves, distinct from the respective neighbouring Counties; yet particular Places, within the Limits of such Cities, are notwithstanding Part of such neighbouring Counties; as the Castles of *York*, *Norwich*, *Lincoln*, and *Exeter*, are Part of the respective Counties of *York*, *Norfolk*, *Lincoln*, and *Devon*; also that Part of *Gloucester*, where the *Affizes* for that County are held, is Part of the County of *Gloucester*, and the like of *Worcester*, and some others; and therefore the Justices of the Peace of the County of *Devon* may at the Castle of *Exeter* hear and determine Offences against the Laws of Excise happening to have been done in the County of *Devon*; and the like they may do at the Castle of *Norwich*, tho' the Offence happen to be committed in the County of *Norfolk*; and the like may be done in other like Cases. But the County of *York* is divided into three RIDINGS, viz. *East*, *West*, and *North Ridings*; and the County of *Lincoln* is divided into three DIVISIONS, viz. *Lindsey*, *Kesteven*, and *Holland*; and as the Law has directed, that Differences and Complaints relating to the Duties of Excise should be heard and determined in the respective *Ridings* and *Divisions* of the Counties of *York* and *Lincoln*, all such Forfeitures and Offences, committed in any of the said *Ridings* or *Divisions*, ought to be heard and determined accordingly: But, the said Act not mentioning any other *Divisions* in any other Counties, what is mentioned about the *Divisions* of these two particular Counties only, cannot be applied to any other Counties. — And observe, that if a common Brewer, Distiller or Maltster, or other Person liable to the Duties of Excise, should happen to have a Dwelling-house in one County, and a Brew-House, Distilling-House, or Malt-House, or the like, in another County; and if at such Brew-House, Distilling-House, or Malt-House, any Fact should be done contrary to any Laws of the Excise; the Information in such Case must be laid in the County where such Brew-House, Distilling-House, or Malt-House is, before two or more Justices of that County; and, when they have granted their Summons upon such Information, such Summons may be served upon the Defendant in the County where he liveth, or in any other County; and if the Defendant, tho' served therewith, doth not appear upon such Summons, Judgment may be given against him, as well as if he had lived in the same County where such Information is laid. See also Page 263.

off the Excise, they are to pay double Duty. Every Maltster, or other Person making Malt, (except such as compound for the Malt by them made for their own private Use only) are Monthly, and every Month, to make true Entries of all the Malt made by them in such Month; and they are to pay and clear off within four Months after they have made, or ought to have made, such Entry. All Persons making Candles within the Bills of Mortality, are Monthly, and all Persons in any other Parts of Great Britain, are every six Weeks, to make true Entries in Writing of all Candles by them made in such Month and Six Weeks; and those who make Candles within the said Weekly Bills, are once in every Four Weeks, and others in other Parts of Great-Britain, once in every Six Weeks after they have made, or ought to have made, such their Entries, are to pay and clear off the Duty. But Compounders for the Duties on Candles made and spent in their own Families, are not subject to these Regulations. The Makers of Soap or Starch are to enter and pay as Makers of Candles. All Paper-makers, and Printers and Painters of Paper for Hangings, Printers and Painters of Calicoes, Linens, &c. are in every Six Weeks to make their Entries, and are in Six Weeks next after to pay and clear off the Duty. Drawers or Refiners of Silver or Gilt Wire are to make Entries Monthly, and are to pay and clear off the Duty in Six Weeks next after they so have made their Entries, or ought to have made them.

Here follow some Observations about Entries and Informations ¶.

If, at or before the Beginning of their Second Month, Distillers, Victuallers, and Inn-keepers, do not make proper Entries of all they have brewed or distilled in the First Month of their Brewing or Distilling, at the Beginning of such Second Month, Informations * may be laid against them for not making such

Part II.

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Entries ;

* Justices of the Peace, &c. are authorized and enjoined, upon any Complaint or Information of any Forfeiture made, or Offence committed, to summon the Party accused, and upon his Appearance or Contempt to proceed to an Examination of the Fact: So that the Informer, it is plain, is to make the first step; and he is to make his Complaint unto, or to exhibit his Information before two or more Justices. But it is not by any of the Excise Laws said, that such Complaint or Information must be in Writing: So that the Justices may, if they will, admit of a verbal Complaint or Information; but then it will be incumbent upon them to make a Record thereof, and of the Time and Place when and where such Complaint was so made: And tho' in the recording of these Informations it is mentioned, that the Informer in his proper Person exhibited to the Justices his Information; &c. this doth not make it necessary that the Informer should be personally present; for if the Justices are satisfied, that the Informer so named doth own the Prosecution, that is sufficient for them to proceed thereon. The Law directs, that within a Week after laying an Information, Notice be given to the Person or Persons against whom such Information shall be laid, in Writing, or left at their Dwelling Houses; so that the Time for summoning and giving Notice is not to exceed a Week, next after the laying the Information; which Week is to be computed from the Day when the Information is laid: As soon as the Summons is drawn up, which is generally when the Information is laid, and signed by the Justices, let a Copy be made of it, and of the Justices Names, who have signed it; and let the Copy be compared with the Original Summons, and be made to agree therewith; then let the Copy be delivered to the Defendant himself, or left for him at his Dwelling-House, either with his Wife or Servant; and, if it be so left for him, let the Person, with whom the same is left, be acquainted with the Intent of it, that they may acquaint the Defendant: And if the Person, who left the Summons meet with the Defendant before the Hearing, he should ask him, if he received such Summons? Or acquaint him that such Summons was left for him as aforesaid; that the Defendant may have no Pretence to complain of being surprized for Want of having had timely Notice.

¶ See also Page 453

Entries ; and if before or at the Beginning of the *Third Month* they do not clear off and pay all the Excise accrued from them in such *First Month*, Informations for double the Value of such Duties, as so accrued in such *First Month*, may be laid against them in the Beginning of such *Third Month*. All Makers of Candles, Soap, or Starch (living out of the Bills of Mortality) or Makers of Paper, or Painters of Paper for Hangings, or Printers or Painters of Callicoos or Linens, if they do not, by the End of the *First six Weeks*, make true Entries of all they have wrought in such *first Six Weeks*, Informations may be laid against them at the Beginning of such *second six Weeks* for the Penalties for not making such Entries ; and if at the End of the *second six Weeks* they do not pay and clear off the Duties which have accrued in the *first six Weeks*, Informations may at the Beginning of such *third six Weeks* be laid against them for double the Value of such Duties as have accrued in such *first six Weeks*. The aforesaid Duties being public Revenues, in which, besides the Crown, the whole Nation is interested, due Care should be taken, that they are collected at such Times as they ought to be paid ; but this is to be so done, that all fair Traders be likewise used with as much Tendernefs and Indulgence, as is consistent with the securing the said Duties ; for the Laws relating to Forfeitures are not intended for the Profit of Informers, or to injure or ruin the fair Trader, but to secure the Duties, and that all of the same Trade may pay alike in Proportion to the Manufactures they make or improve ; and therefore these Laws should be accordingly carried into Practice and Execution. Notwithstanding what has been said, yet common Brewers, who live out of the *Bills of Mortality*, are often indulged to pay, when Inn-keepers and Victuallers pay, which is consistent with the securing the Duties, because all Coppers and Utenfils used in Brewing by them, whether they are the Brewer's own, or do really belong to other Persons, yet are liable to these Duties ; and though the Utenfils of other Traders are in like Manner liable, yet the Coppers, &c. used by common Brewers, being generally fixed, and of greater Value than the Utenfils used by other Traders, their Utenfils are a better Security for the Duties. On the other Hand, Maltsters having a Month to enter, and, by the last Act, Four Months to pay, they may owe a large Sum for Excise, before the five Months are expired : And, where there is Reason to suspect that the Maltster may go off before the Time of Payment, it may be very adviseable to examine, whether such Maltster hath made due and true *monthly* Entries of all the Malt he has made in such respective Month ; and if he hath not, as few of them do, then, to secure the Duty, an Information may, at the Beginning of the Second Month, be laid against him, for not making a true Entry of the Malt which he made in the *First Month* ; or, at the Beginning of the *Third Month*, an Information may be laid against him, for not making true monthly Entries of all the Malt by him made in the *two preceding Months* : And if Judgment be thereupon obtained for the Penalties for not making such Entries, such Judgment will go a good Way towards the securing the Duties due from the Maltster or Maltsters so suspected.—Where such Judgments so obtained are only made use of to secure the Duty, such Prosecution cannot be thought hard ; but, in Cases of Hazard, it is the Duty of the Collector to lay such Informations, for not making such true Entries, and to get Judgment thereon : But, unless it be in such Cases, the laying of such Informations for not making such true Entries is not approved of by the Commissioners of Excise, who

do not like the Trader should be made uneasy by unnecessary Prosecutions. In the Case of such a suspected Maltster as I have been speaking of, he may have made an Entry of *Part* of what he made in each Month; yet if such Entry do not contain the *Whole* made in such Month or Months, an Information for not making Entry may be laid, notwithstanding such short Entry; for a short or imperfect Entry is in Law as no Entry at all, it not being a *true* Entry, which is what the Law requires: And whether any Trader omits to make any Entry at all, or whether he makes a short Entry, or false Entry, the Information may, in any of the said Cases, be, That such Trader did not make a *true* Entry; or did not make a true Entry of the Kinds and Quantities, or the like, without particularly mentioning, that such Entry was short, defective, or false, in this or that Particular. For though, at the Hearing * of Informations for such defective En-

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tries,

* If the Defendant appears at the Time and Place appointed for determining the Matter in the Information, and doth voluntarily confess the Fact or Facts, Judgment must then be given upon such his Confession: But if the Defendant doth not appear as by the Summons appointed, or if he appears, and also pleads that he is not guilty of the Fact or Facts mentioned in the Information, then it will lie upon the Informer to make good his Information by Proof and Evidence, which must always be upon Oath. And therefore if a Witness, who is duly sworn, gives Evidence, that another Person told him so and so, or that he heard another say so or so, whatever it be that such Witness so repeats, as said by another, goes for nothing; for what is so repeated, instead of being legal Proof or Evidence, is in Truth nothing but a repeating upon Oath, what was said in common Discourse, which might not be true, not being spoken upon Oath, and therefore is not to be depended upon: And further, though a Witness should upon his Oath repeat what another, when duly sworn at a former Trial or Hearing, had said upon his Oath, even That is not to be allowed to be given in Evidence, if the Person who originally said what is so repeated be living; because Evidence of a lower Degree must not be admitted, when Evidence of a higher Degree may be had. But, if the original Speaker of what is so repeated be living, then he may be produced to give his own Evidence, which is of a higher Degree than a Repetition thereof from any other Person.—But a Repetition of what the Defendant himself hath been heard to say, hath been always admitted and allowed to be given in Evidence, because such Repetition is the best Evidence that can be had of what a Defendant saith; because he cannot be compelled to give Evidence against himself.—It is to be observed, that it is not necessary to prove every Particular in the Information, in the Manner and Circumstances it happens to be mentioned in such Information, viz. In an Information for Hiding and Concealing, it is necessary to mention, That the Defendant, fraudulently and with Intent to deceive, did hide and conceal: But it will not be proper or fit that such Witness should be required to depose, whether such Hiding and Concealing was done fraudulently, and with Intent to deceive; for that would be to require the Witness to swear to the Intention of the Defendant, which is not the Business of the Witness, or what either Law or Reason doth expect from a Witness. But the Business of the Witness is to relate the Fact, and the Circumstances thereof, truly, and from thence the Justices are to judge and determine both of the Offence and of the Fraud.—And it is always to be observed, That, if sufficient Proof be given of a Fact against the manifest Letter and Meaning of a Law, the Justices must judge it to have been done fraudulently, unless the Defendant makes the contrary to appear by plain and sufficient Evidence. The stale Objection, That what a Witness says is out of Spite or Malice, arising from some late Quarrel, &c. has frequently little Weight. For tho' such Quarrel may be the Occasion or such Witness's discovering what he knows, yet that don't destroy the Credit of his Testimony; for tho' the Quarrel may indeed provoke him to tell what he would not have told, if such Quarrel had not happened, yet it doth not follow, that the Quarrel doth provoke him to tell more than he knows to be true; and if he doth not, then the Quarrel ought not to invalidate the Credit of his Testimony; and that therefore all Evidence, occasioned by Malice, ought not to be rejected. But if by Malice any are provoked to say more than is true, that indeed ought to be rejected. On these Informations

tries, it will be necessary to prove the particular Defects, yet that doth not make it necessary to mention such Defects in such Information; because if, upon a general Information, the Informer doth insist upon any particular Defect, he must then prove such Defect; and therefore it will not be necessary for him to set forth such Particulars in his Information — If, thro' the Negligence of the Collector, the Traders are permitted to be many Months in Arrear, it will not always be necessary to lay Informations for the double Duty of all that is so in Arrear: For the double Duty of *one Month*, or of *one six Weeks*, will be sufficient to answer all that is in Arrear, and the Charges; in such Case, it will be sufficient to lay an Information for the double Duty of such *one Month*, or of such *one six Weeks* only; and the rather, because in the laying Informations for Duties charged near to the Time of laying such Informations, if great Care is not taken when the Times of Payment are fully expired, it may at some Times happen, that such Informations, as to some Part of the Duties, may be laid before the Time of Payment may be fully elapsed, which may occasion the Trouble of a special Judgment. * That is, Judgment may be given for the Informer, as to so much as such Information is properly laid for in Point of Time; and for the Defendant, as to so much as such Information happeneth to be improperly laid for in Point of Time: For the avoiding of which, where the double Duty of *one Month*, or *one six Weeks*, will be sufficient to answer the whole Arrear and Charges, to lay the Information for the double Duty accrued in such *one Month*, or *one six Weeks*, may be sufficient. The making use, in the Manner before mentioned, of a Judgment for not making a true Entry, in order to secure Duties really due, or of a Judgment for the double Duty accrued in one Month, or six Weeks, in order to secure Duties then in Arrear for any former Month or Months, is not only agreeable to the Rules of Law, but of Equity. — No Doubt but

Informations the Matter in Question generally lies in a narrow Compass, and might soon be determined, if each Party would speak only to that which is the Fact in Question: But in these Cases the Debating of that which really doth not concern the Matter in Question, often takes up more Time than is spent about the Matter itself; therefore the Prosecutor and his Witnesses should avoid saying any Thing that may occasion any Discourse as doth not relate to the main Point, and they should avoid all manner of Reflections; and if any are made on them, they should pass them by till the Hearing is over: For such as are guilty, especially if old Offenders, and those who are concerned for them, will gladly take Occasion to say a great deal, tho' nothing perhaps to the Purpose. — To prevent which, always avoid entering into Disputes about any Thing that is not the Point in Question; and, tho' you have something to say which you may think very sharp and cutting, yet if it is not directly to the Point, keep it to yourself; for the Defendant will answer to that more willingly than he will to the Matter itself, if that be against him.

* There being no Directions given by any Law *how long* before the Time of Hearing Notice shall be given; nor how soon after the laying the Information the Hearing and Determination may be: For which Reason, where the End and Design of the Prosecution is only to reform and correct irregular Practices, the Proceedings may be more deliberate, that the Persons so prosecuted may have no pretence to complain of their having not had convenient Time to prepare for their Defence: But where the End and Design of the Prosecution is only to secure Money actually due to the Crown, which is in Danger of being lost, if the Prosecution be any way delay'd; there the Proceedings ought to be with as much Expedition as the Law will admit. — However, it will not be convenient to hurry on even Prosecutions for Arrears; but, when Persons are slow and dilatory in paying their Duties, Informations may be laid in Time, so that timely Notice may be given, and convenient Time may be allowed for the Hearing thereof, which will be much better than such hasty Proceedings; but in Cases of absolute Necessity more speedy Proceedings may be justified.

but to many it may seem hard, that in all Cases of Arrears, the Informations would be laid for the double Duty, more especially against those whose being in Arrear is their Misfortune, and not their Fault; I mean such as would pay if they had it: But Informations cannot in these Cases be laid before Justices of the Peace for the single Duties; because the Power, which the Justices have in these Cases, is derived and depends upon the Words in the said Act of 12 Car. II. and therefore their Power, and the Manner of Proceeding before them, must be guided and governed thereby. And as the Justices are not empowered to hear and determine Complaints or Informations, touching or concerning the *single* Duties of Excise, or touching and concerning the *Arrears* thereof; but their Power being, by the express Words of the said Act, to hear and determine *Forfeitures* and *Offences*; and the said *Forfeitures* and *Offences* being the Subject Matter of their Power and Jurisdiction, they cannot receive or hear Informations for the *single* Duties only: So that, when Informations are to be laid for not paying such Duties, such Informations must be laid so, as to bring the Cause within the Power and Jurisdiction of the Justices, and consequently must be laid for the *Forfeiture* in such Case, that is, for *double* the Value of the Duties; their being no other Method for the recovering before Justices of the Peace such Duties in Arrear, as aforesaid. And as these Informations before the Justices must be for *double* the Value of the Duties, so in Cases where the Facts mentioned in such Informations are either confessed by the Defendants, or fully proved, the Judgments must also be for *double* the Value of the said Duties so proved to be in Arrear; and the Warrants in such Cases must likewise be for the *double* Duty, because, if they should be otherwise, they would not be legal Warrants, as not being pursuant to such Judgments, nor to the said Act. Neither can the Justices of the Peace regularly mitigate * the Forfeitures of *double* Duty: For the Clause whereby they are empowered to mitigate Penalties and Forfeitures is not general and unlimited, but is restrained by the Words in that Clause, *viz.*, "So as by such Mitigation the Forfeiture be not made less than double the Value of the Duty of Excise which should or ought to have been paid." And therefore, the Forfeiture being for no more than barely the *double* Duty, it cannot be mitigated by Virtue of the before mentioned Clause; and there being no

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other

* In the making *Mitigations*, the Consequence of being too *favourable* should be well considered; for, if the Offender is suffered to be a Gainer by his Fraud, he will thereby be encouraged to go on, and others, seeing his Success, will think themselves obliged to follow his Example. If there be several of a Trade, and one with-holds Part of what he ought to pay, whilst the other honestly pays according to the Law: If he who is detected doth not after all pay in Proportion to him who trades fairly, he who pays but Part only, may afford to under-sell the other; and if such other finds that his Trade declines thereby, he, for fear of losing his Trade and Customers, and by a wrong Application of the Maxim of Self-Preservation, may be induced to think himself obliged to endeavour by Fraud to defend against Fraud, and to repair his particular Losses out of the Revenue of the Public. Many are the Insinuations used to move Justices to Lenity in these Cases; but amongst others it is urged, That the Fraud of one particular Offender can have no considerable Influence on the general Produce of any Branch of the Revenue, and that therefore the Justices, without Prejudice to the Public, may exercise Lenity in that particular Instance: Yet, in Answer, it is to be considered, That tho' such Offender may be the only Offender at that Time before those particular Justices, yet there may be many others of the like Nature before other Justices in other Places, at that very Time, who with as much

other Clause whereby the Justices are impowered to mitigate, they must not in such Case, either in the Body of their Judgment or Warrant, express or mention any such Mitigation, lest thereby the Proceedings be made erroneous. But, by Indorsements on these Warrants, the Justices may direct and appoint what particular Sum shall be levied and taken for the Charges in each particular Case, and may direct those who are to execute such Warrants, not to take more than such Sum and the single Duties; for these Warrants * must be always executed with as much Civility and Ease to the Persons concerned, as may be, taking only the single Duty and reasonable Charges, which the Collectors are to endeavour to get the Justices to settle and apportion. And the Collectors are enjoined not to insist upon double Duty, or on the Penalties for Non-Entry in any Case, unless they first give the Commissioners an Account, and are by them directed so to do. It will be best in all Cases of the Kind I have been speaking of, to mention the true Quantities and Qualities of the Liquors, or other Manufactures, for which

much Reason and Justice may urge the same Insinuation, which may be used on the Behalf of every single Offender, until it be extended so far as to destroy the Force and Effect of the Excise Laws: But supposing that he in Fact is the only Offender in that Kind, the Honesty of others ought not to extenuate his Knavery, but he ought to be acquainted; That if all others are honest, and he the only Offender, his Punishment ought to be the more exemplary. — The Poverty of an Offender is likewise frequently urged to the Justices to excite their Lenity, and that the Public is better able to bear the Loss occasioned by a poor Man's Fraud, than he is to make Satisfaction. The Poverty of an Offender (to be sure) ought to be considered, but then the Poverty and Impoverishing of many others who are as poor, tho' more honest, ought to be considered, more than the Poverty of any One; and the letting one Offender escape, without due Punishment, may and will in many Cases be the Occasion not only of the Impoverishing, but also of the Undoing of many, such as are both poor and honest, because an Offender who pays only *Part*, whilst others pay the *Whole* that is due, can and will *under-sell* such as pay the *Whole*, and thereby may and will undermine the fair Traders, and rob them of the Means of getting their Livelihood.

* By the Act of 12 Car. II. the Justices of the Peace are impowered to grant Warrants for levying such Penalties and Forfeitures; the Words are, "*And for Want of sufficient Distress to imprison the Party offending till Satisfaction be made.*" Nevertheless, before any Warrant can be regularly made out to arrest and imprison the Person of the Defendant, there must first be a Warrant to seize the Utensils, &c. and a Return made thereof, which Method ought to be strictly observed. For, the Law being in all Cases very tender of depriving Men of their Liberties, all possible Means should be used to levy the Money on the Goods, &c. before the Person of the Defendant be imprisoned. Nevertheless, if a Warrant to seize the Utensils and Goods be made and delivered to an Officer to be executed; and on making diligent Search for such Utensils and Goods, the Officer cannot find sufficient to answer the Sum mentioned in such Warrant; and if the Officer make a Return, that, having made diligent Search, he cannot find any Utensils or Goods whereon to levy the said Sum mentioned in such Warrant; or that he hath seized some Utensils or Goods which he has sold and disposed of, and that the Money thereby arising amounteth but to such a Sum, being less than the Sum mentioned in such Warrant; then a Warrant may be made to arrest and imprison the Person of the Defendant; but then Care should be taken that there is a *Duplicate* made of such Warrant, because, after the Officer has so arrested the Defendant, he must conduct him to the Prison next to the Place where he was arrested, and deliver him into the Hands of the Keeper of such Prison, who cannot regularly receive him without a Warrant; and it will not be safe for the Officer to part with the Warrant whereby he arrested the Defendant, because he ought to keep that for his Justification; and that he may do so, and that the Keeper of the Prison may also have a Warrant for his Justification, it will be necessary that there should be a *Duplicate* of such Warrant, that the Officer may keep one, and the Keeper of such Prison may have the other, for their respective Justifications.

which the Duties are unpaid; But if it so happen that the true Quantities cannot certainly be known, (as sometimes they cannot) when such Information is to be prepared, then it is adviseable to mention rather *more* than less than the true Quantity; because if an Information be laid for *less* than the true Quantity, the Judgment cannot be for *more* than is mentioned in the Information, tho' *more* should be fully proved; but if the Information should be laid for *more* than is proved, yet such Information will be good and effectual for *so much* as is proved; and the Justices accordingly ought to give Judgment for the Informer, in Proportion to so much as is so proved, and ought to acquit the Defendant of the Residue, which is not proved to their Satisfaction.

¶ *I shall now give some Insight into the Nature of Appeals.*

The Officer is to observe, that an Appeal is a Resort from a Sentence already given by one Judicature to a superior Judicature, to the Intent that all that was heard by the Judicature who passed such Sentence, may be heard and inquired into again by the Judicature, to which such Appeal is made: And, in such Cases, the superior Court so appealed to, doth always re-hear and inquire into the Fact, as fully as the Court did who first passed Sentence; which being done, the superior Court doth either affirm the first Sentence, or in the Stead thereof doth pass such other Sentence as seemeth just, and according to the Merits of the Fact then before such superior Judicature. And therefore the Justices at the Quarter-Sessions have full Power to re-hear and re-examine all the Witnesses; and, being fully informed of the Truth and Merits of the Matter in question, they may either reverse the first Judgment given by the particular Justices, or may affirm the same either in *Part* or in the *Whole*, or may in the Stead thereof make such other Judgment as to them seemeth just. And tho' the Justices, who gave the first Judgment, did not make any Mitigation, yet the Justices at the Quarter-Sessions may (if they see Cause) make such a Mitigation as seemeth just to them; for by the Appeal the whole Matter is before them, and the Justices at the Quarter-Sessions, are Judges of the Mitigation as well as of the Penalty; and in one Instance their Power exceeds the Power of the Justices who gave the first Judgment: For the Justices cannot allow or adjudge any Costs or Charges beyond the Penalty; but the Justices at the Quarter-Sessions may adjudge and allow Costs and Charges even beyond the Penalty, if they see Cause for so doing. It is to be observed, no other Witnesses ought to be examined upon Hearing Appeals, but such only as were examined on the Hearing before the Justices who gave the first judgment; for the Hearing upon an Appeal is not an original Hearing, but is only a Resort or Appeal to another Judicature, in the same Cause, and under the same Circumstances, as it was at first heard. And thereupon the Judicature so appealed to is to give such Judgment as should have been given on the first Hearing, so that, if the first Judgment was wrong, the Judicature appealed to ought, instead thereof, to give such Judgment as is right. The Gentlemen in the Commission of the Peace have a great Trust reposed in them by these Laws, and may be infinitely serviceable both to their King and Country, if they proceed upon the Merits of the Facts and Offences brought before them on these Prosecutions; but if they chuse on the other Hand to proceed on nice Exceptions, and to re-

verse and quash Judgments legally given on full Hearing of all Parties, the Consequence will be, that all Offenders will be prosecuted in the Courts of *Westminster*, as by the Excise Laws they may be, and then the Charges of defending such Prosecutions will amount to a great deal more than the Money recovered on Judgments given by the Justices. And further, in every Instance where an Offender really guilty is screened by Niceties and Subtilties from the Punishment due to him, for contriving to avoid paying the just Duties, it is not only Injustice to the Prosecutor in such Case, but it is an Injury to all others who pay the like Duties as such Defendant ought to pay. And it may be further observed, that perhaps it may be a Question, whether curious Inquiring into the Certainty or Uncertainty of Expressions will not occasion more Uncertainty than it will prevent.

Some Observations relating to the making of Seizures.

It is to be understood, that besides a verbal refusing or telling the Officer that he shall not enter, or that he shall not take an Account, there may be an actual refusing; as where the Doors, &c. are shut, locked, or made fast, and the Trader doth not upon Demand open them, or cause them to be opened; for tho' this is not a verbal, yet it is an actual refusing to permit the Officer to enter. Or if a Trader has so contrived the Utensils and Places used for carrying on his Business, that the Officer cannot take an Account of the Manufactures there found; and if, upon a fair Demand made by the Officer, he refuseth to make it practicable for the Officer to take an Account of the Goods there found, it likewise is an actual refusing to permit the Officer to take an Account; for, when a Law requires and enjoins any Thing to be done, the necessary Means for the doing thereof, and without which such Thing cannot be done, are implied, tho' perhaps not expressed in such Law; the Intent of the Law being, that all such Persons as are liable to the Excise Duties should be obliged to order and dispose their Houses, Places, and Practices so, and in such manner, that these Laws may be complied with, and may be put in Execution, and that it may be possible and practicable for the Officers to perform their respective Duties; and if the respective Persons liable to these Duties, after Demand made, refuse so to do, they in such Cases may be prosecuted for the before mentioned Penalties. But every Difficulty which an Officer may happen to meet with won't be a just Cause for a Prosecution; for it will happen, that some Houses and Places cannot be so easily survey'd as some others; and therefore the Officers must be content at some Places to take more Pains, and be at more Trouble than will be necessary at others, and must not in all such Cases immediately lay Informations; for as the Traders liable to these Duties must not by Design, or Want of due Care and Foresight, put unnecessary Difficulties upon the Officer; so the Traders liable to these Duties must not be prosecuted on these Clauses, for and upon Account of every Difficulty which an Officer may meet with; but if their Houses and Places are so contrived, that it is impracticable for Officers there to take true Gauges and Accounts, and if upon Request and Demand they will not alter them, they may then be prosecuted.

It is worth the young Officer's Observation, that foreign Liquors which have been unduly landed, and are found near the Sea-coast, in the Possession or Custody of any Person who doth not give a satisfactory Account how

he came by them; such finding in the Custody of such Person is an Evidence that he is the Proprietor thereof; and in such Case an Information may be laid against him as the Proprietor thereof. But Informations on Seizures must not be in the Collector's Name, unless he himself actually makes the Seizures. * And, if two or more Persons make a Seizure, the Information may be in the Name of one of them only, and then the other or others may be Witnesses to prove such Seizure. And what has been seized by one Officer may be a second Time seized by another Officer; and in such Case the Information may be laid in the Name of him who made such second Seizure, and he who made the first Seizure may in such Case be a Witness on such Information: And therefore when an Officer has made a Seizure of any foreign Liquor unduly put on Shore, it will be best to get the Collector to make a second Seizure thereof, that the Information may be laid in his Name, and that he who made the first Seizure may be a Witness.

☞ *These Further Hints concerning Informations, &c. I apprehend may be useful to all young Officers.*

When Informations are lodged against Printers of Callicoes and Linens, it is necessary to mention that the Callicoes and Linens were *printed, painted, stained, and dyed*; yet such mentioning doth not make it necessary to prove, that all those Operations were performed; for, the Law having laid the Duty upon *any one* of those Operations, the Duty becomes a Debt, vested in the Crown on the performing of *any of them*; and if Proof be made of *any one* of the said Operations, the Information will be good. Silks for *Handkerchiefs* being printed, paying a different Duty from other Silks, in Informations it will be proper to distinguish whether they are Silks for *Handkerchiefs* or other Silks. When common Brewers, Innkeepers or Victuallers, for using in great Towns, consisting of several Parishes, Vessels or Store-houses, &c. without due Notice, have Informations laid against them, it is necessary to mention in what particular Parish in such Town they were so used, because the Poor of that Parish are intitled to one Third Part. But in other Cases it will be sufficient to alledge the Offence to have been committed at such Town, without mentioning the Parish in such Town, unless it be where a Town happens to be Part in one County and Part in another; then it will be necessary to distinguish the Parish or Part of the Town where the Offence was committed, that the Information may be laid in the proper County.

When Manufactures liable to the Duties of Excise are concealed to evade the Duties, it is usually done in Places which the Offender has given no Notice of: All such Offenders may be prosecuted either for *not giving due Notice* of such Places, or for *such hiding and concealing*; and as the Informer may proceed for either of the said Penalties, so he may lay Informations for both; but if in Fact an Offender hath hid and concealed but *one* Parcel or Quantity, there must not in such Case be Judgments against him for *both* Penalties, because none ought to be twice punished for the same Offence. In all such Cases, therefore, if Judgment be given against him on one such Information, the other Information must be withdrawn, or the Defendant acquitted thereof; the laying two or more Informations

* See the Instructions for making Seizures, on Pages 236 and 386.

formations enables the Informer, at the Hearing, to proceed upon such one of them as he finds can be maintained by the Evidence which shall be then produced: And it is requisite, if the Proof then produced be sufficient to maintain the Information, for the greatest Penalty, that the Informer then proceed upon that, and, if he obtaineth Judgment, the other must be dropt. But if at the Hearing it appears that Notice hath been given of such Room or Place, the Defendant upon that Information must be acquitted; but tho' the Offender is so acquitted for not giving Notice, yet he may be convicted on an Information for hiding and concealing, and therefore the Informer may in such Case proceed for hiding and concealing, because it is possible so to hide and conceal even in a Room or Place of which Notice has been given, as may subject the Offender to the Penalty for hiding and concealing. Maltsters, for not giving Notice of a Room or Place used for the making or keeping Malt, are liable to a Penalty of Fifty Pounds, and for hiding and concealing Malt the Penalty is *Ten Shillings per Bushel*; if therefore the Quantity found concealed doth exceed One Hundred Bushels, the Penalty for concealing will, in such Case, be higher than the Penalty for not giving Notice; and it will be adviseable to proceed for such *concealing*, rather than for *not giving Notice*. Because there is not any express Clause for the Penalty for not giving Notice of Cellars or Places for keeping of Mead, the proper Way to proceed against Makers of Mead will be for the Penalty for *hiding*.

If Low Wines, Spirits, and Strong Waters are hid and concealed, the Penalty is *5 s. per Gallon*, of which no Part is given to the Informer; and, the Law having appointed no Distribution of the said Penalty, the whole belongs to the King: The Informations, therefore, in this Case, must be on the Behalf of the Crown only, and not on the Behalf of the Informer. Makers of Candles, Soap, Paper and Starch, Printers and Painters of Paper for Hangings, and Printers, Painters, &c. of Silks, Callicoes, Linens or Stuffs, likewise Planters and Owners of Hops, hiding and concealing any of the said Manufactures or Commodities, or the Materials for making the said respective Manufactures, the Penalty is *Twenty Pounds* in each Case; for which Reasons in Informations against any of them, for hiding and concealing, it is not necessary to mention any certain Quantity; for it will be sufficient to mention that the Defendant did hide and conceal either Candles, Soap, Paper, &c. or Materials for making thereof. The Penalty is *Fifteen Pounds* against Makers of Vinegar, Sweets, Metheglin, or Mead, or against Retailers of Cyder, for not permitting an Officer to enter or gauge &c. If Makers of Candles, Soap, Paper, or Printers of Callicoes, Linens, &c. or Makers of Starch, refuse to permit Officers to enter to take an Account; for such refusing they may be prosecuted for the Penalties either of *Twenty Pounds* or *Fifteen Pounds*, as the Informer shall think fit to lay it in his Information. The Officer is to observe, that unless Silks, Callicoes, and Linens be the proper Goods of the Printer they cannot be seized by Virtue of a Warrant, or be made liable to any Penalties recovered against such Printer.—Warrants made by Justices of the Peace being usually directed to Constables and Headboroughs, &c. it hath been usual so to direct Warrants in *Excise* Causes; but it is much more proper that *these* Warrants should be directed to the Officers of *Excise*, because they give Security to the Crown, that they will faithfully pay and account for all Money which they

they shall receive by Virtue of such Warrants or otherways; and such Officers, being under the Direction of, and frequently attending upon the Collectors, to whom such Money when levied ought to be paid, the *Excise* Officers can pay the Money to the Collectors more conveniently than the Constables can: But it is proper in all such Warrants to insert a Clause, requiring all Constables, &c. to assist the Officers in Executing such Warrants, that, in Case the Officers in the Executing thereof do meet with any Opposition or Resistance, they may then by Virtue of such Clause require the Constables, &c. to assist them therein, so far as to see the Peace kept, and the Law duly complied with. These Warrants may bear Date the same Day when the Judgment is given, or any Day after, (not being *Sunday*.) And where there is no Danger of the Defendant's carrying off his Goods and Effects, it will be adviseable for the Officer before he executes the Warrant to demand the Money of the Defendant, and to try by fair Means to prevail with him to pay the Money; but, if Persuasion will not do, the Officer may then execute the Warrant, but should always do it in the best and civilest Manner that may be. When the Officer has arrested such Defendant, and delivered him to the Gaoler or Keeper, it will be proper for such Officer, on the Back of the Warrant he designs to keep, to take a Receipt under the Hand of such Gaoler or Keeper, acknowledging his receiving such Prisoner.—A Warrant to seize the Body, for Want of sufficient Distress, can't be granted until a Return is made to the Warrant for seizing the Goods; and such Return can't be made until the Utensils or Goods seized are sold, because, until they are actually sold, it can't be certainly known how much they can be sold for; and the Utensils and Goods can't be sold until full fourteen Days after the seizing thereof.

Tho' we are sensible that the various Forms of Informations, Summonses, Judgments, and Warrants, would make a Volume of themselves; yet we apprehend the following authentic Proceedings against a common Brewer will be very satisfactory to the inquisitive young Officer.

The Form of an Information for Arrears against a common Brewer, for the double Duty of Strong Beer and Ale, and of Small Beer.

Norfolk, ss. **B**E it remembered, That this Twentieth Day of April, in the Twelfth Year of the Reign of our Sovereign Lord King GEORGE that now is, at Thetford in the said County of Norfolk, John Downer, Gent. in his proper Person, as well for his said Majesty as for himself, exhibited to us Brian Aisley and Oliver Dodson, Esqrs, two of his said Majesty's Justices of the Peace for the said County, residing near to the Place where the Offence herein after mentioned was made, a Complaint and Information; and thereby informeth us, That at several Times between the first Day of February, and the Sixteenth Day of March, both now last past, at Thetford aforesaid, one Abel Swall, at a common Brewhouse then and there belonging to, and used by him, did brew several and respective Quantities of Beer and Ale; that is to say, Thirty Barrels of Strong Beer and Strong Ale, each above Six Shillings the Barrel;

The Time and Place of laying the Information recorded.

The Information.

Barrel; and Sixty Barrels of Small Beer, not exceeding Six Shillings the Barrel; and that the said *Abel Swall*, at and during the respective Time and Times of Brewing the said Beer and Ale, and of every Part thereof, having been, and yet being there a common Brewer, there did accrue and become due to his said Majesty from the said *Abel Swall*, for the said Beer and Ale so by him brewed as aforesaid, certain Rates, Duties, and Sums of Money, amounting in the whole to Ten Pounds and Five Shillings, of Lawful *English* Money, which said Rates, Duties, and Sums of Money so accrued, or any Part thereof, the said *Abel Swall* hath not paid or cleared off, to, or for the Use of his said Majesty, within a Week next after he, according to the Form of the Statute in such Case made and provided, did make, or ought to have made, his Entry or Entries of the said Beer and Ale so by him there brewed as aforesaid, or of any Part thereof, or at any Time since; but the same yet remains wholly

The Forfeiture. due and unpaid, contrary to the Form of the said Statute in such Case made and provided: Whereby he hath forfeited double the Value of the said Rates, Duties, and Sums of Money remaining unpaid as aforesaid, that is to say, Twenty Pounds and Ten Shillings of like Money. And thereupon the said *John Downer* as well humbly prays the Judgment of us the said Justices in the Premises, as that he may have one Fourth Part of the said Forfeitures, according to the Form of the Statute in such Case made; and that the said *Abel Swall* may be summoned to answer the said Premises, and to make Defence before us the said Justices.

A Summons on the foregoing Information.

To Mr. Abel Swall, common Brewer.

Norfolk, ss. **W**E *Brian Aisley* and *Oliver Dodson*, two of his Majesty's Justices of the Peace for the said County, do hereby give you Notice, That *John Downer*, Gent. hath exhibited before us an Information against you for the Sum of Twenty Pounds and Ten Shillings, being double the Value of certain Duties of Excise of Beer and Ale by you brewed; the single Duties whereof you (as he alledgeth) ought long since to have paid, but have neglected so to do: You are therefore hereby required to appear before us, at the House of *Thomas Thomson*, being the Sign of the Angel, an Inn, and Public House in *Thetford* in the said County of *Norfolk*, on the second Day of *May* now next ensuing, at Ten of the Clock in the Forenoon of the same Day, then and there to answer the said Information, and to make Defence thereto. But, if you neglect so to do, we shall proceed as if you was personally present.

And we do further authorize and require, *Mr. Anthony Gilder*, Officer of Excise, or any other Officer of Excise, to serve this our Summons, and to attend us at the Time and Place before-mentioned, then and there to make a Return to us the said Justices. Given under our Hands at *Thetford*, this Twentieth Day of *April*, Ann. Dom. 17--

A Judgment on the foregoing Information, the Defendant having appeared and pleaded.

AT the Time and Place appointed by our Summons on the Information within written, that is to say, this Second Day of *May*, Anno Domini 17--, at *Thetford* in the County of *Norfolk*, the within named Defendant

fendant appeareth and pleadeth, That he is not guilty of the Offence within mentioned; but the same being now fully and duly proved, we do convict him thereof: It is therefore now here considered and adjudged by us the said Justices, that the said Defendant hath forfeited the within mentioned Sum of Twenty Pounds Ten Shillings, *which we mitigate and lessen to the Sum of Ten Pounds*, to be distributed as the Law directs. Given under our Hands at *Thetford* aforesaid, this Second Day of May, An. Domini 17--

But, if the Penalty is not mitigated, then these Words, (viz. which we mitigate and lessen to the Sum of Ten Pounds) must be left out.

A Warrant (in Consequence of the foregoing Judgment) against a Victualler, to levy Ten Pounds.

To John Downer and Anthony Gilder, Officers of Excise, and to either of them, and to such other Person and Persons as they, or either of them, shall take to their Assistance.

Norfolk, ff. **WE** whose Hands and Seals are hereunto set, two of his Majesty's Justices of the Peace for the said County of Norfolk, do in his said Majesty's Name authorize and command you, every or any of you, that upon the Brewing Vessels and Utensils for Brewing used by *Abel Swall*, of *Thetford* in the County of Norfolk common Brewer, in the Brew-house and Place where he usually brews at *Thetford* aforesaid, and upon the Goods and Chattels of the said *Abel Swall*, you or any of you do levy the Sum of Ten Pounds of Lawful English Money, by us mitigated and lessened from the Sum of Twenty Pounds Ten Shillings of like Money, recovered against him by *John Downer*, Gent. who prosecuted as well for our Sovereign Lord the King as for himself, for a certain Offence committed by the said *Abel Swall* against the Laws and Statutes of Excise, whereof he is convicted before us; and for the levying thereof you are to seize, take, and carry away the said Brewing Vessels and Utensils of Brewing, and also the Goods and Chattels aforesaid; and if in Fourteen Days next after such Seizure the same shall not be redeemed, then and in such Case (after the Expiration of the said Fourteen Days) you are to make Sale thereof, or of so much thereof as shall be sufficient to levy the said Sum of Ten Pounds, which when levied you are forthwith to pay to the Collector of Excise, for the Collection, called *Norfolk Collection* for the Time being, to be by him distributed and answered according to the Statute in such Case made and provided: And if after levying thereof any overplus shall remain of the said Brewing Vessels, or of the said Goods or Chattels, or of the Money arising by the Sale thereof, you are to render such Overplus to the said *Abel Swall*; and all Constables and Headboroughs of the said County are hereby required to be aiding and assisting to you in the due Execution hereof; but in Case there cannot be found sufficient to raise the Sum last mentioned, then and in such Case you by a Return to this our Warrant are forthwith to certify the same to us the said Justices. Given under our Hands and Seals at *Thetford*, in the said County of Norfolk, this Second Day of May, in the Year of his said Majesty's Reign, Anno Dom. 17--

Q. But.

But, if no Utensils or Goods can be found, a Return may forthwith be made by the Officer, as follows :

The Form of a Return to be made on a Warrant where no Utensils or Goods can be found.

Norfolk, ff. **I** John Downer, one of the Officers of his Majesty's Duties of Excise, do humbly certify to *Brian Aisley and Oliver Dodson, Esqs.* two of his said Majesty's Justices of the Peace for the County of *Norfolk*, That by Virtue of a Warrant from the said Justices, to levy the Sum of Ten Pounds upon the Brewing-Vessels and Utensils for Brewing, used by *Abel Swall* in his usual Place of Brewing, and upon his Goods and Chattels ; I have made diligent Search for such Vessels, Utensils, Goods, or Chattels ; and that I do not know, or can find, that the said *Abel Swall* hath any Goods or Chattels whatsoever. Witness my Hand hereunto set, at *Thetford*, in the said County of *Norfolk*, this Fourth Day of May, Anno Domini 17 --

The above Return being duly made, a Warrant may be made out to seize the Body, as followeth :

A Warrant to take the Body of the Defendant, upon a Return of the first Warrant that he hath no Goods.

To *John Downer and Anthony Gilder, Officers of Excise, and to such other Person and Persons, as they, or either of them, shall take to their Assistance.*
And

To the Goaler or Keeper of such Prisons, to whom these Presents shall come.

Norfolk, ff. **W** Hereas We whose Hands and Seals are hereunto set, two of his Majesty's Justices of the Peace for the said County of *Norfolk*, by our Warrant, under our Hands and Seals bearing Date the Second Day of May now instant, Did require and command you, the said *John Downer and Anthony Gilder*, or either of you, to levy the Sum of Ten Pounds therein mentioned, on the Brewing Vessels and Utensils for Brewing, used by *Abel Swall*, of *Thetford*, in the said County of *Norfolk*, common Brewer, and upon the Goods and Chattels of the said *Abel Swall* : And whereas you the said *John Downer*, by a Return and Certificate under your Hand, bearing Date the Fourth Day of May now instant, have certified to us, that having made diligent Search for such Brewing-Vessels or Utensils for Brewing, and for such Goods and Chattels, you cannot find any, whereon to levy the said Ten Pounds, or any Part thereof, and that no such Vessels, Utensils, Goods, or Chattels can be found ; We therefore the said Justices Do in his said Majesty's Name hereby Authorize, Require, and Command you, every, or any of you, to take and arrest the Body of the said *Abel Swall*, and forthwith to carry the same to the Goal or Prison of and for the County or Place where you shall so take and arrest the same ; and the same, together with a Duplicate of this our Warrant, there to deliver into the Custody of the Goaler or Keeper of the said Goal or Prison of and for the said County or Place, there to remain in safe Custody, until he shall satisfy and pay the said Sum of Ten Pounds of lawful *English Money*,
by

by us mitigated and lessened from the Sum of Twenty Pounds Ten Shillings of like Money, by us the said Justices adjudged against him, upon an Information exhibited against him before us, by the said *John Downer*, Gent. as well on the Behalf of his said Majesty, as of himself for a certain Offence committed by the said *Abel Swall* against the Laws and Statutes of *Excise*, whereof he stands convicted before us the said Justices: And all Constables and other his Majesty's Officers are hereby Authorized and Required, to be Aiding and Assisting to you in the due Execution hereof; and the Goaler and Goalers, Keeper and Keepers of such Goal or Prison, to which you shall so carry the Body of the said *Abel Swall*, is and are hereby Authorized and Required to receive into his or their Custody the Body of the said *Abel Swall*, and keep the same in safe Custody, until he shall satisfy and pay the said Sum of Ten Pounds before-mentioned; and for your, any, or either of your doing, as before is respectively directed, this shall be to you, any or either of you respectively, a sufficient Warrant and Authority. Given under our Hands and Seals at *Thetford* in the said County of *Norfolk*, this Fifth Day of *May*, in the Year of the Reign of his said Majesty, *Annoq; Domini 17 - -*

From and after the 5th Day of *July* 1763, it was ordained, That there should be raised, collected and paid, for the Use of his Majesty, his Heirs and Successors, for and upon all Cyder and Perry of what Kind soever imported into *Great Britain*, over and above all other Duties whatsoever, the additional Rate, or new Duty of 40s. per Ton. And it was farther enacted, That from the 5th Day of *Jul*, 1763, there shall be raised, levied and collected, the Sum of 4s. for every Hoghead of Cyder or Perry which shall be made in *Great Britain*, and so proportionably for a greater or less Quantity, (over and all other Duties now payable for Cyder or Perry) the said Duty of 4s. per Hoghead, to be paid by the Maker of such Cyder or Perry.

The Duties upon Cyder and Perry made in *England*, and those upon Cyder and Perry made in *Scotland*, are to be under the Receipt and Management of the Commissioners of Excise in those Places respectively.

The Commissioners of Excise are by this Act empowered to appoint a sufficient Number of Officers for raising and collecting the Duties upon Cyder and Perry; and all Monies arising by the said Duties are (the necessary Charges thereon being deducted) to be paid into the Exchequer, apart from all other Branches of the public Revenue.

Makers of Cyder or Perry (not being Compounders) are to enter their Names and the Mills, Presses, or other Utensils, Storehouses, and other Places to be made Use of, at the next Office of Excise, Ten Days at least before they begin to work; such Entries to be made in Writing: And if any Maker of Cyder or Perry shall, contrary to this Act, make Use of any Mill, Press, or other Utensil, Storehouse, Warehouse, or other Places, for making and keeping any Cyder or Perry, without having first made due Entry of the same, such Maker shall forfeit the Sum of Twenty-five Pounds for every such Offence.

Officers of Excise upon Request made are, at all Times in the Day-time, to have free Access to all Places entered, or made Use of for making or keeping Perry or Cyder; and shall be permitted to gauge, and take an Account of all the Cyder or Perry which shall be found there. Such Accounts

a Copy

a Copy of which the Officer or Officers shall leave for the Maker, shall be a Charge upon such Maker of Cyder or Perry; and the Amount of the Duties thereby charged shall be paid by the said Maker, within Six Weeks from the Time of being charged therewith. The usual Allowances, given to Makers of Cyder and Perry, by any former Law or Laws, are to be continued by this Act.

No Cyder or Perry, exceeding the Quantity of Six Gallons; shall be removed from any Part of this Kingdom, without a Certificate to be granted by the Officer of Excise (without Fee or Reward) for that Purpose; upon Pain of forfeiting the Cyder or Perry so removed without Certificate; together with the Casks, Vessels, or other Package containing the same.

Persons making Cyder or Perry, to be consumed in their own private Families only, may be admitted to compound for the Duties, at the Rate of 5s. per Annum, for the Number of Persons which shall be mentioned in a List given by the Person who makes the Composition, of which the proposed Family shall consist: The Composition is to be renewed annually, and the Money to be paid down at the same Time. The Houses, Store-Cellars, or other Places, of Persons making Composition and Agreement as aforesaid, shall not, during such Composition, be liable to the Inspection or Survey of an Officer of Excise for the said Duties. Upon Encrease of the Family of the Person making the Composition, a new List is to be given in of the Names of the several Persons added to the Family, who shall then pay down a proportional Composition for the Persons so added, *viz.* Five Pence for each Calendar Month unexpired of the Year for which the Composition was made, for every Person so added; and in this Manner fresh Lists shall be delivered, and Compositions made accordingly every Year.

Compounders neglecting to deliver in the Lists, and pay their Composition on Money, shall become liable to the Survey of the Officers of Excise, and be charged with the Duty upon Cyder and Perry. And if any Compounder shall deliver in a List which does not contain the true Number, with the Names of the several Persons of which his Family did then really consist; or if any Person shall neglect to deliver in a List of the Number and Names of the Increase in his Family, according to the Directions of this Act, or to pay the proportionable Composition aforesaid, the Offender shall forfeit Twenty Pounds. Children under Eight Years of Age are not to be reckoned as Part of the Family of the Person who makes the Composition.

Compounders having more Cyder or Perry than is sufficient for their own Family's Use, may sell or dispose of the same, provided they give two Days Notice in Writing of their Intent, to the proper Officer, who is to attend, and take an Account of the particular Quantity intended to be sold, or otherwise disposed of, and charge the said Compounders with the Duty on Cyder or Perry thereon. And if, after such Account being taken, the said Cyder or Perry be removed, without a proper Certificate from the Officer being first obtained, the Person or Persons guilty of such Offence shall forfeit Twenty Pounds.

No Person making Composition for the Duties upon Cyder or Perry shall lett, or lend any Utensil for making Cyder or Perry, without giving three Days previous Notice to the proper Officer to attend and charge the Duties upon such Cyder and Perry, as shall be made at the Place to which the Utensils for making Cyder or Perry are removed; unless it shall appear the Cyder

der or Perry so made really, and, *bona fide*, the Property of another Compounder for the Duty on Cyder and Perry. And no Part of such Cyder or Perry shall be removed, on any Pretence, without such Certificate as aforesaid, to accompany the same, to prevent the Seizure thereof. If any Makers of Cyder or Perry, Compounders for the Duty, granted by this Act, for Cyder or Perry to be consumed in their Family, shall let or lend any Utensil to any Person, for the Purpose of making Cyder or Perry, they shall, for every such Offence, forfeit the Sum of Ten Pounds.

Persons using their own Utensils for making of Cyder or Perry for their own Use, or procures Cyder or Perry to be made at the Mill, or Press of another Person, are deemed Makers of Cyder or Perry within the Meaning of this Act. Compounders for the Duties upon Malt, during the Time of their Composition, are not liable to compound or pay Duties for Cyder or Perry to be made and consumed in their own Families, unless they shall sell, or otherwise dispose of any Part thereof; in which Case, they are to comply with the Directions given to Compounders in like Circumstances.

Occupiers of Tenements, not rated above forty Shillings *per Annum* to the Land Tax, and not making more than four Hogsheads of Cyder and Perry in the whole in a Year, are exempted from the Duties on Cyder and Perry, and from Compounding.

The Duty of four Shillings *per* Hogshead upon Cyder and Perry, charged by this Act, shall be drawn back upon Exportation, also upon the Distillation thereof in Low Wines and Spirits, and likewise upon the same being made into Vinegar, and charged with the Duties as such.

If any Person shall oppose or molest any Officer of Excise in the seizing of any Cyder or Perry, or shall rescue or cause the same to be rescued after it is seized, or shall strive or cause to be striven, break or otherwise destroy any Casks, Vessels, or Package, containing the same, every Person so offending shall, for each Offence, forfeit fifty Pounds.

Informations for Offences against this Act, by the Makers of Cyder or Perry, to be laid within three Months after being committed; and Notice thereof, in Writing, is to be left at the Dwelling-houses of the offending Person or Persons, within one Week after the laying and entering such Information.

Persons aggrieved by the Judgment of any Justices of the Peace, relating to the Duties or Penalties granted or incurred by this Act, may appeal to the Quarter-Sessions, and the Determination of the said Court shall be final.

Appellants shall give Notice in Writing, by the Space of six Days next before such Sessions shall be held as aforesaid, to the Parties of the other Side, of their Intention to bring such an Appeal: And it shall be lawful for the Justices, or the major Part of them, in their Quarter-Sessions, to award Costs. Provided always, that in Case there be not the Space of six Days between the first Judgment and the next Quarter-Sessions, the Appeal may be made to the second Quarter-Sessions. The Justices at such Quarter-Sessions respectively, may proceed to a Re-hearing of the Merits of the Case, upon Appeals: And all Defects of Form in the Original Proceedings may be rectified by the Court; and their Determination shall be final.

All Powers, Rules, Methods, Penalties, and Clauses in the 12th of *Car.* 2. or in any other Act relating to the Revenue of Excise, where not altered

by this Act, to be put in Execution with respect to the Duties on Cyder and Perry. And all Fines, Forfeitures, Penalties, imposed by this Act, to be sued for, and recovered by such Ways and Means, as by any Law or Laws of Excise now in Force, not otherwise directed by this Act: And one Moiety of every such Fine, Penalty, &c. to be for the Use of his Majesty, his Heirs, &c. and the other to him who shall discover, inform, or sue for the same.

The Duty on Cyder and Perry brought from the Islands of *Jersey*, *Guernsey*, *Sark*, or *Alderney*, to be paid by the Importer, before landing, on Penalty of being seized and forfeited.

By an Act passed in the fourth Year of the Reign of his present Majesty *George III.* the Time limited by the former Act for Payment of the Duty on Cyder and Perry, shall, from and after the 5th Day of *July 1764*, be extended to six Calendar Months Charge thereof; and, after the Expiration of the said six Months, may be recovered and levied as thereby directed.

After the 5th Day of *July 1764*, any Person, being a Maker of Cyder or Perry, desirous of compounding for the said Duty thereon, for such Cyder and Perry, as shall be consumed in the private Family of such Person only, may compound for the same, at the Rate of two Shillings *per Head per Annum*, (in lieu of the former at five Shillings *per Head*) for each Person of eight Years of Age or upwards, whereof the said Family consists, according to an exact List given in, and signed by the Person who makes the Composition. This Composition to be renewed annually; and the Money arising thereby shall be laid down at the respective Times of making this Composition: And in Case the Family of any Person making the Composition shall be increased at any Time during the Year, then the additional List, containing the Names of the several Persons of the Age of eight Years or upwards added to the Family, shall be given in by the Person making the Composition; who shall then also pay down a proportionable Part thereof for the Persons so added; *widely*, two Pence *per Calendar Month* for every Person added, during the subsisting unexpired Term of such Year, and in like Manner fresh Lists shall be delivered, and Compositions made accordingly every Year: The Monies arising by the said Compositions to be applied in the same Manner, and for such Purposes as Duties. All other Parts of the former Act relating to Compositions (not hereby altered) continue in full Force, and are to be put in Execution, in the same Manner, to all Intents and Purposes, as by that Act directed.

Makers of Cyder or Perry, not being Compounders, who shall intend to make Use of any Mill, Press, or other Utensil whatsoever, not being their own Property, but that of some other Person or Persons, whether Compounders or not, shall, ten Days at least before using such Mill, Press, or other Utensil for making Cyder or Perry, give in, and make a true and particular Entry in Writing, at the next Office of Excise, of their respective Names, together with every Mill, Press and other Utensil intended to be employed, and the Name or Names of the Owner or Owners thereof; and also of every Cellar, Storehouse, or Warehouse, wherein such Cyder or Perry is intended to be made or stored.

Makers of Cyder or Perry making Use of any Mill, Press, or Utensil, Storehouse, Warehouse, Cellar, or other Place whatsoever, for making, or keeping

keeping Cyder or Perry, without having made due Entry thereof as aforesaid, shall forfeit the Sum of twenty-five Pounds for every such Offence.

Officers of Excise are to have free Access at all Times in the Day-time, upon their Request, to the Mill-house, Store-house, Cellar, or other Place, entered, or made Use of for making, or keeping of Cyder or Perry, and to gauge and take an Account of all the Cyder or Perry there found; and shall make a Return thereof to the Commissioners of Excise, leaving a true Copy of such Return in Writing with the Maker, which shall be charged upon such Maker of Cyder or Perry, to be cleared and paid off within six Months from the Time of being charged therewith.

No Proprietor of any Mill, Press, or other Utenfil for making of Cyder or Perry, shall be obliged to give Notice of the letting or lending such Mill, Press, &c. or of the making Cyder or Perry therewith, by the Person to whom the same shall be so let or lent.

For the Accommodation of such Maker of Cyder or Perry, who shall compound for the Duty thereon, the Officer of Excise is to deliver (during the Time of making Cyder or Perry) and leave with the Maker or Makers thereof, if demanded in Writing, a sufficient Quantity of blank Certificates, to be filled up by the Maker occasionally; such Certificates, provided they accompany the Quantity of Cyder or Perry mentioned therein, shall be a sufficient Protection for the Removal of such Cyder or Perry immediately from the Mill-pond's Mouth, or Place where the same shall be made.

The Officer of Excise delivering any Quantity of blank Certificates to the Maker, shall also deliver the Counterparts of such Certificates, bearing the same Numbers with the Certificates themselves; and the Maker is hereby required, whenever he fills up the Blanks of any Certificate for the Removal of Cyder or Perry, as aforesaid, at the same Time to fill up and subscribe the Blanks of the Counterpart thereof, in all Particulars agreeable to the Certificate; and such Maker shall, at the Time of the Delivery of the said blank Certificates and Counterparts, give a Receipt to the Officer of Excise delivering the same, acknowledging that he hath received so many blank Certificates and the Counterparts thereof, numbered in a progressive Order, one, two, three, &c. The Certificates and Counterparts not used, are to be produced when called for; and the several Quantities of Cyder and Perry specified to have been sold in the Counterparts delivered up are to be verified upon Oath; and the Officer of Excise is to make a Charge of the Duties upon the Cyder and Perry so sold or disposed of, and a Copy thereof in Writing is to be left with the Maker, who is to pay the Duty accordingly, within six Months from the Time of being charged therewith.

Makers of Cyder or Perry who shall refuse to deliver to the Officers of Excise, when required, all the Counterparts of Certificates then filled up, or declare upon Oath or Affirmation, or shall sell or dispose of more Cyder or Perry from the Mill-pond's Mouth, or Place of Making, than is mentioned in such Counterparts so delivered up, or shall fraudulently insert into the Blank of either Certificate or Counterpart, a different Quantity of Cyder or Perry than is really sent with such Certificate; shall, for every such Offence respectively, forfeit the Sum of twenty-five Pounds. And that no Certificate, to be filled up by the Maker of any Cyder or Perry, shall be in Force for the Removal thereof immediately from the Place of Making, but between the first Day of September, and the thirty-first Day of December, in

each Year; and that every such Maker shall, every Year, within ten Days next after the thirty-first Day of *December*, in each Year, deliver, or cause to be delivered to the Officer of Excise of the Place where such Maker resides, all the blank Certificates and Counterparts thereof, which have not been filled up by such Maker: And if any such Maker shall neglect or refuse to deliver up to the proper Officer all the blank Certificates and Counterparts thereof, which have not been filled up by such Maker; every such Maker shall, for every such Offence respectively, forfeit the Sum of twenty-five Pounds.

If any Person or Persons whatsoever assault, molest or hinder any Officer or Officers of Excise in the due Execution of any of the Powers or Authorities granted by this Act, the Party or Parties so offending shall, for every such Offence, forfeit the Sum of fifty Pounds.

If any Officer or Officers shall refuse to leave a true Copy of his Report or Charge in Writing, with the Maker or Makers of Cyder or Perry, or to grant a Certificate for the Removal of any Cyder or Perry, upon reasonable Request made for that Purpose, or shall refuse or willfully neglect to accept of any Composition of Agreement, from any Person empowered by this Act to compound and agree for, in lieu of the Duties upon Cyder or Perry; every such Officer of Excise, so refusing or willfully neglecting, shall forfeit and pay the Sum of forty Shillings.

The several Penalties imposed by this Act may be sued for, mitigated, and disposed of, by the same Ways and Methods, and in the same Proportions, as any Penalty imposed by the Act may be sued for, recovered, mitigated, or disposed of.

Any Person molested, or prosecuted in Pursuance of the Act, may plead the general Issue, and give the Act and the special Matter in Evidence; and if afterwards a Verdict shall pass for the Defendant, or the Plaintiff shall discontinue or be non-suited, or Judgment shall be given against him on Demurrer, or otherwise; then such Defendant shall have treble Costs awarded against the Plaintiff.

In order to prevent the Frauds frequently committed by Makers of hard Soap, in cutting into the Pan or Copper stale or rotten Soap, and also by the Cuttings of good Soap, being put into the Copper to be refreshed or made new, and for which the Duty was allowed. It was ordained, that from and after the fifth Day of *July*, 1765, no such Allowance shall be made, but in lieu thereof, and as a Compensation of all Waste and other Losses, or Damages whatsoever, there shall be allowed one Pound in every ten Pounds of hard Soap, charged by the Officer upon the respective Makers thereof.

Makers of hard Soap shall, at their Expence, provide and affix sufficient wooden Covers (to be approved of in Writing by the respective Surveyors or Supervisors of the Excise, of the Division or District in which such respective Makers of hard Soap shall reside) to every Copper, Pan, or other Utensil used for Boiling or Making any hard Soap: Such Covers the Officer is to lock and seal down when the Fire is damped; the said necessary Locks and Keys, together with the Pipes that serve to convey the Salt Lees from the Copper or Pan, shall be provided by the respective Surveyors or Supervisors of Excise of the Division or District wherein such Makers of hard Soap do reside, at the Expence of such respective Makers; and whenever any such Maker of hard

hard Soap intends to light a Fire under his Soap Pan or Copper so locked and sealed down, and shall have given twelve Hours Notice thereof (if within the Limits of the head Office of Excise in *London*) or twenty-four Hours Notice (if in any other Part of *Great Britain*) to the proper Officer, the said Officer shall attend to unlock and open the Copper, Pan, or other Utensil so secured.

Any Maker of hard Soap, not providing such sufficient wooden Covers, to be approved of as aforesaid, or refusing to pay for the Locks, Keys, Fastenings, &c. or shall open any Copper, Pan, or other Utensil, after the same shall have been locked down, or shall wilfully break, or damage, any Lock, Seal, or Fastening, shall, for every such Offence, forfeit the Sum of twenty Pounds.

Every Maker of hard Soap, residing within the Limits and Jurisdiction of the head Office of Excise in *London*, must give twelve Hours Notice in Writing to the proper Officer of his Intention of lighting Fires, whether for making Soap, cleansing his foul Goods, or preparing any Materials for making of Soap, or forfeit the Sum of twenty Pounds for every such Neglect. And Makers of hard Soap, who reside in other Parts of *Great Britain*, are to give Twenty-four Hours Notice in Writing to the proper Officer, before they light any Fire for the above-mentioned Purposes, or forfeit the like Sum of twenty Pounds.

Makers of hard Soap are to use regular square or oblong Frames only, for the cleansing Soap (whether perfect or not) into, when taken out of the Copper, Pan, or other Utensil, where the same was boiled or prepared; and that the Bottom, Sides and Ends, of every such Frame shall respectively be of the Thickness of two Inches at least; and every such Frame shall not exceed Forty-five Inches in Length, nor fifteen Inches in Breadth; of which Frames, all and every Maker or Makers of hard Soap, are to give Notice in Writing, at the Office appointed for the Duties on Soap, next to the Place where such shall be made, before they make any Use of the said Frame for cleansing hard Soap into: It is likewise directed, that the said Frames shall be numbered by, or Order of, the respective Surveyors or Supervisors of Excise who survey the respective Makers of hard Soap, to whom such Frames belong, at the Expence of such respective Makers: And if any Maker or Makers of hard Soap use any Sort of Frame, or other Kind of Utensil for the Purposes aforesaid; or if the Bottom, or Ends, or Sides, of any Frames shall not be of the Thickness of two Inches at least; or if any of the said Frames exceed forty-five Inches in Length, or fifteen Inches in the Breadth thereof; or if any Maker of hard Soap, use any such Frame for cleansing into, without first giving such Notice in Writing, as above directed, or shall make Use of any Frame or Frames, before they have been marked and numbered by the Surveyor, Supervisor, or other proper Officer, he, or they, shall, for every such Offence respectively, forfeit and pay the Sum of twenty Pounds.

No hard Soap (whether perfectly made or not) shall, after the same has been cleansed into a Frame or Frames, on any Pretence whatsoever, be returned, or put again into the Copper or other Utensil, to be re-boiled, or refreshed; and if any hard Soap shall be so returned into the Copper or other Utensil, such Soap shall be again charged with the Duties on Soap.

There having been great Frauds committed by private Makers of Soap, who, when discovered, call themselves by other than their true Names, and to avoid being prosecuted, abscond themselves, that they may not personally have Notice of any Prosecution, or be served with a Summons to answer the same: It shall therefore be deemed legal and effectual Notice and Summons to private Makers of Soap, liable to Prosecution for using unentered Work-shops, &c. if such Notice or Summons be left at the Place or Places, where any such Discovery of a private Maker of Soap shall be made, directed to the Person or Persons, by either their right or assumed Name or Names, who shall be prosecuted for having made Use of any Boiling-house, Store-house, Shop, Room, or other Place for making or keeping of Soap, or for keeping or boiling any Oil, Tallow, Pot-Ash, or other Materials proper to be made into Soap, or for using or having used any Copper, Pan, Kettle, Fatt, Cistern, Trough, or any other Utensil whatsoever, for boiling or making of Soap, without having first given Notice in Writing at the Office for the said Duties on Soap, next to the Place where such Soap shall be made, according to the Directions of the Statute in that Case made and provided.



A TABLE

A TABLE of the most USEFUL MATTER
relating to *Ale, Beer, Cyder, Perry, Sweets, Mead, Vinegar,*
Distill'd Spirituous Liquors, Foreign Brandy, Rum, Arrack, &c.
contained in those Chapters, intituled, *The Rise and Progress of*
the EXCISE, with necessary References to the APPENDIX, &c.

N. B. In this Table Care has been taken to ascertain the Distribution of the
Forfeitures therein mentioned.

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1. Not making Entry Weekly forfeit 5l. and 10l. more; three fourths to the King, and one fourth to the Informer. _____ 250
2. Wilfully making a false Entry forfeit 5l. (and their Allowance for 6 Months ensuing) three fourths to the King, and one fourth to the Informer. 250

466 *A TABLE of the Rise and Progress of the Excise, &c.*

BREWERS and Retailers of Beer and Ale, continued.

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4. *Not clearing the Duty within a Week after Entry is made, to pay double Duty.* ————— 250
5. *Not declaring how much Strong and how much Small they intend to make, before any Part is cleansed or removed, forfeit 20s. per Barrel; half to the King, and half to the Informer, and the whole charged Strong.* ————— 259
6. *Increasing or laying over Strong Beer or Ale after the Length is declared, forfeit 5l. per Barrel; half to the King, and half to the Informer.* 259
7. *How common Brewers shall not avoid the Penalties relating to the increasing Strong Drink.* ————— 259
8. *Having Pipes or Stop-Cocks under Ground, or private Pipes out of one Brewing-Vessel into another, or into any other Place, forfeit 100l. for every Offence; half to the King, and half to the Informer.* — 259
9. *In what Manner they may use Pipes, Stop-Cocks, &c.* ————— 260
10. *Setting up, Altering, or Enlarging any Brewing Vessel, or having any private or concealed Brewing-Vessel, forfeit 200l. for every such Vessel; half to the King, and half to the Informer.* ————— 260
11. *Delivering any Wash, Tils, Ale, Beer, or Vinegar-Beer to any Distiller or Vinegar-Maker, without Notice, forfeit 20 s. per Barrel; half to the King, and half to the Informer.* ————— 260
12. *Carrying out Drink at unlawful Hours, forfeit 20 s. per Barrel, one third to the King, one third to the Poor, and one third to the Informer.* 253
13. *Servants concerned in making any Increase, or in laying off before the Length is declared, forfeit 20 s. per Barrel (or 3 Months Imprisonment;) half to the King, and half to the Informer.* ————— 259
14. *Erecting or Altering any Brewing-Vessels, or making use of them for Brewing, or making use of any private Storehouse, Cellar or Place, forfeit 50 l. for every Offence, and the Person likewise in whose Occupation such Place is, forfeits 50 l. one third to the King, one third to the Poor of the Parish, and one third to the Informer; and the Vessels and Drink to be seized for the Use of the Poor.* ————— 252
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16. *All Brewing-Vessels in the Brewhouse, (by whomsoever claimed) are liable to the Debts and Duties of Excise.* ————— 253
17. *Converting Small Beer or Worts into Strong by Mixture without giving Notice, forfeit 20 s. per Barrel, Page 256; also 20 s. more per Barrel; one third to the King, one third to the Poor of the Parish, and one third to the Informer.* ————— 259
- 17*. *Using any private Storehouse or Place, forfeit 50 l. for every Offence; one third to the King, one third to the Poor of the Parish, and one third to the Informer.* ————— 266
18. *Using Sugar, Honey, Foreign Grains, Guinea Pepper, Essentia Bine, Cocculus India, or any other unwholesome Ingredients, (in Brewing Beer or Ale) forfeit 20 s. for every Offence; half to the King, and half to the Informer.* ————— 260, 262

BREWERS

A TABLE of the Rise and Progress of the Excise, &c. 467

BREWERS and Retailers of Beer and Ale continued.

19. Mixing Sugar, Honey, Foreign Grains, Guinea Pepper, *Essentia Bini*, *Coccus Indiae*, or any other unwholesome Ingredients (the mixing any of them) with Ale or Beer, forfeit 20l. for every Offence; half to the King, and half to the Informer. Page 262
20. Using Broom or Wormwood, or any other bitter Ingredients in brewing Beer or Ale, instead of Hops, forfeit 20l. for every Offence; half to the King, and half to the Informer. 262
21. In what Manner they may use Broom or Wormwood in Beer and Ale. 263
22. Using Melasses, Coarse Sugar, Honey, or Extract of Sugar, in Brewing or Working Beer or Ale, forfeit 100 l. and all the Liquor in which they shall be put; half to the King, and half to the Informer. 257
23. Using Melasses, Coarse Sugar, Honey, or Extract of Sugar, in Brewing or Working Beer or Ale, or having above ten Pounds Weight found in their Custody, forfeit 100 l. half to the King, and half to the Informer. 260
24. Servants and every other Person that assists in using any Melasses, Honey, Coarse Sugar, or Extract of Sugar, or in carrying or conveying them into the Brewhouse, or other Place belonging to such Brewer, forfeit 20l. (or three Months Imprisonment;) half to the King, and half to the Informer. 260
25. Brewing for any other Brewer or Retailer, without giving Notice and paying down the Excise, forfeits 5l. per Barrel; the Person for whom it is brewed likewise forfeits 5l. per Barrel; half to the King, and half to the Informer. 253
26. Opposing any Gauger or Officer in searching for any private Pipe, Stop-cock or Conveyance, &c. forfeit 50 l. half to the King, and half to the Informer. 259. 260
27. Mixing Small Beer or Small Worts with Strong Beer or Ale on the Dray, or in the Victualler's Cellar, or other Place, forfeit 5l. for every Offence; half to the King, and half to the Informer. 257
28. Cleansing or removing any Part of the Guile (before the whole is brewed off) without Notice, forfeit 4s. per Barrel; half to the King, and half to the Informer. 257
29. Refusing the Officer to enter by Day or Night, and to stay in the Brewhouse to see the Guile brewed off, &c. forfeit 20l. half to the King, and half to the Informer. 257
30. Selling, carrying, or delivering out Beer or Ale, after being forbid by the Officer (and the Duty being not paid) forfeit 5l. and double the Value of the Goods; also 10l. more, and double the Value of the Goods; three fourths to the King, and one fourth to the Informer. 251
31. Concealing, hiding, or conveying away Drink or Worts from the Sight of the Gauger before 'tis gauged, forfeit 20 s. per Barrel; one third to the Poor of the Parish, and one third to the Informer. 253
32. Mixing Beer, Ale or Worts of an extraordinary Strength (after 'tis received from the common Brewer) with any Small Beer, Ale or Worts, in any Vessel containing three Gallons or more; forfeit double the Duty of the Strong Beer or Ale so mixed; three fourths to the King, and one fourth to the Informer. 255

BREWERS

468 *A TABLE of the Rise and Progress of the Excise, &c.*

BREWERS and Retailers of Beer and Ale continued.

33. *Bribing or corrupting any Gauger or Officer, forfeit 10 l. (or 3 Months Imprisonment,) for every Offence, and the Receiver likewise forfeits 10 l. one third to the King, one third to the Poor of the Parish, and one third to the Informer.* ————— Page 254
34. *Also for endeavouring to corrupt any Officer 50 l. half to the King, and half to the Poor of the Parish.* ————— 332
35. *Also for offering to bribe any Officer 50 l. half to the King, and half to the Informer.* ————— 338
36. *Opposing any Officer in the searching for private Backs, Tons, Pipes, &c. forfeit 20 l. half to the King, and half to the Informer.* ————— 258
37. *Refusing to let the Gauger enter the Cellar or other Rooms, and taste the Drink, taken from common Brewers, forfeit 5 l. for every Offence; half to the King, and half to the Informer.* ————— 257
38. *Not making Entry Monthly, forfeit 5 l. more; three fourths to the King, and one fourth to the Informer.* ————— 250
- Not clearing off the Duty, within a Month after Entry, to pay double Duty.* ————— 251
39. *Not making Entry Monthly, forfeit 20 s. and 20 s. more; three fourths to the King, and one fourth to the Informer.* ————— 251
- Not clearing off the Duty within a Month after Entry, to pay double Duty*
40. *Every Person keeping a Public House in any City, Town, Village, or Place whatsoever, retailing Ale or Beer in Vessels not duly fixed and marked according to the Standard, forfeits from 40 s. to 20 s. for every Offence; half to the Poor of the Parish, and half to the Informer.* 260, 261
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| 2. May compound for the Duty with Traders. | 251 |
| 3. To hear and determine all Forfeitures and Offences within the Bills of Mortality. | 252 |
| 4. May hear and determine Forfeitures and Offences (out of the Bills of Mortality) if the Justices of the Peace refuse or neglect to do it for 14 Days after Complaint made. | 252 |
| 5. May summon Evidences and fine them, &c. | 255 |
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| 8. Where they are to sit to execute their Commissions. | 253 |
| 10. What Number of them are to hear and determine Offences. | 334 |
| 11. Acting in the Excise before taking the proper Oaths, forfeit 50 l. per Month. | 254 |
| 12. Taking or demanding Money, or any Reward of any other Person than the King, forfeit their Office, and are disqualified for an Employment in the Excise. | 256 |
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CYDER and PERRY Makers and Retailers.

N. B. "These Traders are to make Entry, and pay off the Duty as Inn-keepers and Victuallers, and Retailers of Beer and Ale, and are subject to much the same Survey, Prohibitions, &c. as may be seen in Page 250, &c. of Chapter IV."

1. Hiding, concealing or conveying away from the Sight and View of the Gauger, forfeit 40s. per Hogshead; three fourths to the King, and one fourth to the Informer. 282

CYDER

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CYDER and PERRY Makers and Retailers continued.

2. Refusing to let the Gauger enter their House or other Place, and take an Account of their Goods, forfeit 15 l. for every Offence; three fourths to the King, and one fourth to the Informer. — Page 282
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4. Who shall be deemed Retailers of Cyder and Perry. — 282, 283
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of Distillers Wash. See Officers, 9, 10, 11, 12. See also Page 288.

DISCOVERERS of Smugglers. See Foreign Brandy, 17, 18, 60, 67, 94, 95, 98.

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1. Not making Entry monthly, forfeit 5 l. — more 5 l. — three fourths to the King, and one fourth to the Informer. — 250
2. Not paying off the Duty within a Month after Entry made, to pay double Duty. — 250, 251
3. Selling or carrying-out after forbid by the Officer, and before the Duty is paid, forfeit 5 l. and double the Value of the Goods; more 10 l. and double the Value of the Goods; three fourths to the King, and one fourth to the Informer. — 251
4. Refusing to permit the Officer to enter their Distil-house by Day or Night, forfeit 15 l. half to the King, and half to the Informer. — 290
5. Who shall be deemed to be a Distiller. — 292
6. In what Time Informations against Distillers must be laid. — 293
7. Working their Stills, or carrying out their Liquors at unlawful Hours, forfeit 10 l. for every Offence; half to the King, and half to the Informer. — 291
8. Selling or removing Low Wines without drawing them off a second Time, forfeit 5 s. per Gallon; half to the King, and half to the Informer. 290
9. Refusing to permit the Officer to enter and take an Account. — 60, 290
10. Refusing to let the Officer take off the Head of any Still, unless it be at Work, or to stay 'till it is wrought off, forfeit 20 l. for every Offence; half to the King, and half to the Informer. — 291
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13. *Receiving or preparing any Wash from Melasses, or other Materials, till the Liquor from Corn is drawn off, forfeit 5l. per Barrel; half to the King, and half to the Informer.* 291
14. *Putting Cyder or Perry into the Still, without giving the Officer forty-eight Hours Notice, forfeit 5l.* 296
15. *The Duty of 4s. per Hogshead on Cyder and Perry is not due from Distillers; but if they use any of it, unless for Distillation, they forfeit 5l.* 296
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17. *Setting up, using, or altering any Still or other Vessel without Notice, forfeit 20l. for every Offence, Page 290.—more 20l.—half to the King, and half to the Informer.* 290
18. *Using any private or concealed Warehouse, Storehouse, or Place, without giving Notice, forfeit 20l. for every Offence.* 290
19. *The Person likewise in whose Occupation such Place is, where any concealed Still, or other Vessel, shall be discovered, forfeits 20l. half to the King, and half to the Informer, Page 290—more 50l.—half to the King, and half to the Informer.* 290
20. *All Stills and Utensils used by Distillers are liable to all Arrears of Excise, in whosever's Hands they are, as if the Offender were the real Owner thereof.* 291
21. *Using or having any private Warehouse or Place, Stills or other Vessels, or any private Pipe, Stop-Cock, or Conveyance; or if any Distiller, or any other Person, obstruct the Gauger in searching for the same, forfeits 100l. for every Offence; half to the King, and half to the Informer.* 292
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7. Importing *foreign Spirits or Brandy*, in Vessels whose Burthen is less than *fifteen Tons*, forfeit *half* to the King, and *half* to the Informer. See Numb. 13, 14. and — 324
8. Importing, landing, or delivering out of any Ship, &c. any *French Brandy*, before the Duty is paid, or secured to be paid; or being aiding and assisting therein, or in concealing the same when landed; the Goods and *double the Value* are forfeited; *half* to the King, and *half* to the Informer. — 325
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12. *Salved Goods*, what Duty, &c. they are to pay. — 326
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14. *Foreign Brandy, Arrack, Rum, Strong Waters, or Spirits of any kind whatsoever*, imported in Vessels of *forty Tons*, or under, are forfeited, or the Value, together with the Ship or Vessel, and all her Tackle; the Hull to be burnt, and the Tackle, &c. sold to the best Bidder, and to be divided; *half* to the King, and *half* to the Informer. 326
15. Any *Boat, Wherry, Pinnace, Barge or Galley*, rowing, or built to row, with more than *four Oars*, (within certain Limits) are forfeited; and the Owner or any Person using or rowing such Vessels, forfeits 40l. *half* to the King, and *half* to the Informer. — 326
16. *More than five Persons in Company, armed, masked, or disguised*, or resisting the Officer, passing with *run Goods* within *twenty Miles* of the *Sea-Coast*, shall be deemed to be *Runners* of *Foreign Goods*, and shall suffer *Transportation* for seven Years; and, if they return before the Expiration of the said Term, shall suffer *Death*. See also 89. 327
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19. *Buying* or *receiving* any *run Goods*, knowing them to be *run*, forfeits 20*l.* *half* to the Informer, and *half* to the Poor of the Parish, or must suffer three Months Imprisonment. — 327
20. Dealers in *Foreign Brandy*, *Spirits*, or *Strong Waters*, must keep them separate from their *British* *Spirits*, or they forfeit *ten Shillings* for every *Gallon* of *British* *Spirits*, together with the *Casks* found in the *Cellar*, or *Place* where the *Foreign Brandy* is kept; *half* to the King, and *half* to the Informer. — 328
21. *Increases* of *Foreign Brandy*, *Spirits*, or *Strong Waters*, found in the *Hands* of any Dealer, shall be deemed *Foreign* unduly brought in, and are forfeited, unless he makes it appear to be by the mixing some of his *Stocks* of *British* *Spirits*, in the *Sight* of the *Officer*, &c. *half* to the King, and *half* to the Informer. [See Distiller, 56.] --- 328
22. *Less* than *one Gallon* of *Foreign Brandy*, *Spirits*, or *Strong Waters*, received by *Retailers* without a *Permit*, is forfeited, with the *Vessel* in which it is contained; *half* to the King, and *half* to the Informer. — 328
23. All *Runners* of *Brandy*, and other *Customable Goods*, and the *Receivers*, are obliged to find *Bail* to answer all *Penalties* incurred by their *Offence*, or to go to *Prison*. — 328
24. All *Seizures* of *Vessels*, *Boats*, *Horses*, *Carriages*, &c. relating to the *Excise* and *Customs*, to be examined and determined by *two* or *more* *Justices* *residing* near the *Place* where the *Seizure* was made. 328
25. When any *Goods* brought by *Coast-Cocket*, being unshipped, are forfeited, or the *Value*; *half* to the King, and *half* to the Informer. 329
26. Any *Foreign Goods* coming *Coast-wise*, landed without the *Presence* of an *Officer*, are forfeited, or the *Value* thereof; *half* to the King, and *half* to the Informer. — 329
27. By whom only *Seizures* of *Liquors* forfeited may be made. See also Numb. 38, 47, 48, 55, 73. — 329
28. *Opposing* any *Officer* of the *Customs* or *Excise*, in making *Seizures* of *Brandy*, *Arrack*, *Rum*, *Spirits*, and *Strong Waters*, as well *British* as *Foreign*, or any *Foreign* *Exciseable Liquors*, or *staving*, or *endeavouring* to *stave* or *destroy* any *Cask* or *Bottle*, containing *Liquors* that have been seized, forfeits 40*l.* for every *Offence*; *half* to the King, and *half* to the Informer. — 329
29. *Officers* of the *Excise* impowered to go on Board and search *Ships*, &c. (as *Officers* of the *Customs*) for *Brandy*, *Rum*, *Arrack*, *Spirits*, or *Strong Waters*, or other *exciseable Liquors* whatsoever, and also for *Coffee*, *Tea*, &c. and to seize all they find, which by *Law* is forfeited, with the *Cask*, &c. containing the same, for the *King's Use*. See also 90. — 329
30. *Officers* of the *Excise* impowered to seize all such *Goods* unshipping, or laid on *Land* before *Entry*, together with the *Casks*, &c. in which they are contained. — 329, 330
31. *When* and *how* the *Officer* may search for and seize *Foreign Brandy*, *Rum*, *Arrack*, *Spirits*, or *Strong Waters*, in any *Place* whatever. 330

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32. Any Person *obstructing* or *opposing* any Excise Officer in the Execution of his Duty, forfeits 100*l.* for every Offence; *half* to the King, and *half* to the Informer. See also 90. Page 330
33. Brandy, Rum, Arrack, Spirits or Strong Waters, whether *British* or *Foreign*, &c. sold or exposed to Sale in *un-entered Places*, are forfeited (besides the 40*s.* *per Gallon*) with the Casks or Vessels containing the same; *half* to the King, and *half* to the Informer. 330
34. Who shall be deemed *Dealers* in *Tea*, *Coffee*, *Chocolate*, or *Cocoa Nuts*. 330
35. Dealers in Brandy, Rum, Arrack, Spirits, or Strong Waters, taking out a Permit, and not sending away the Goods, or returning the Permit to the proper Officer, whilst it is in Force, forfeits *treble* the Value of the Goods; and the Officer, when there does not appear a proper Decrease to answer the Permit, may seize a like Quantity of Brandy, &c. *half* to go to the King, and *half* to the Informer. 330
36. Taking out or Demanding a Permit, unless by a Direction in *Writing* of the Person who is to send the Goods, or his known Servant, forfeits 50*l.* for every Offence, or three Months Imprisonment; *half* to the King, and *half* to the Informer. 330, 331
37. Any Person *harbouring*, *keeping*, or *concealing* any Run Goods, forfeits all *such Goods*, and *treble* the Value; *half* to the King, and *half* to the Informer. 331
38. *Run Goods*, or that are *pretended* to have been *run*, by the Person offering them to Sale, *such Goods*, together with all the Package in which they are contained, may be seized by the Person to whom they are offered to Sale, or by any Officer of the Excise, and the Goods, and *treble* the Value, are forfeited; *half* to the King, and *half* to the Informer. 331
39. Where *run Goods* which are seized are to be deposited. 331
40. *Buying run Goods*, or which the Seller pretends to be *run* or prohibited, the Buyer forfeits the *said Goods*, and *treble* the Value; *half* to the King, and *half* to the Informer. 331
41. The Buyer or Seller of *Goods run*, or which at the Time of Sale the Seller pretended were *run*, shall not both forfeit for the *same Goods*; but the Party, whether Buyer or Seller, that *first* prosecutes the other with Effect, for *treble* the Value of *such Goods*, shall be discharged from the like Forfeiture. 331
42. When the *Warehouse-keeper* (where the Goods are deposited) may prosecute for the Forfeiture of *run Goods*. 331
43. A *Constable*, or other ministerial Officer of the Peace, refusing, &c. to go with the Officer of Excise, where by Law his Presence is necessary, forfeits 20*l.* for every Offence; *half* to the King, and *half* to the Informer. 331, 332
44. What shall be Proof of being an Officer without producing a Commission. 332
45. Any Person, endeavouring to *corrupt* an Officer of Excise, forfeits 500*l.* for every Offence; *half* to the King, and *half* to the Poor of the Parish. 332

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FOREIGN Brandy, Rum, Arrack, &c. *continued.*

46. *Where Brandy, Rum, or other foreign exciseable Liquors, also Tea and Coffee, that is seized, shall be sold.* Page 332
47. *The Officer, or other Person making Seizures, to have for their Encouragement one third free from all Charges.* 332
48. *No Officer of the Customs, or other Person, making a Seizure, is intitled to any Reward, unless he gives Notice in 48 Hours to the next Excise Officer or Supervisor, who are to take an Account of the said Goods, and give a Permit for their Removal.* 333
49. *Officers of the Customs or Excise dealing in Brandy, or other Exciseable Liquors, or in Tea or Coffee, forfeit 50l. to any Person that shall sue for the same, and rendered incapable of any Employment in the Revenue.* 333
50. *In case of a Seizure, if any Question shall arise, whether the Duty of any Foreign Goods has been paid, or were lawfully imported, legally compounded for, or condemned, the Proof shall lie upon the Owner or Claimer, and not on the Officers.* 333
51. *Justices impowered to administer an Oath to Persons skilled in the Nature of the Goods, Vessels, Horses, &c. seized, to view and make a Return of the Value thereof.* 333
52. *Brandy, or other Goods brought from the Isle of Man, except they are of the Growth, Product, or Manufacture of that Place, are forfeited, together with the Ship, &c. half to the King, and half to the Informer.* 333
53. *Any Person carrying such Goods on Shore, or that is aiding or assisting therein, forfeits 100l. half to the King, and half to the Informer, or six Months Imprisonment.* 333
54. *Landing Goods in the Isle of Man, that have been enter'd for Exportation, in order to obtain a Drawback, the Merchant or Exporter forfeits the Drawback, and treble the Value of the Goods; and the Master of the Ship or Vessel is liable to the same Penalties; half to the King, and half to the Informer; and six Months Imprisonment.* 333
55. *Inferior Officers of the Customs neglecting to seize or prosecute any Vessel, Horses, Carriages, &c. that are forfeited by Law, forfeit 50l. half to the King, and half to the Informer or Prosecutor; or to suffer six Months Imprisonment.* 334
56. *When three or more Persons, assembled near the Sea-Coast, &c. in order to assist in running Goods, may be committed to the County Gaol, and on Conviction to be transported for seven Years; and, if they return before the Expiration of the said Term, shall suffer Death. See also 16 and 89.* 335
57. *Every Person, who shall apprehend any Person guilty of the said Offences, is intitled to a Reward of 50l. See also Numb. 66 and 94.* 335
58. *Any Person losing a Limb, or an Eye, or being maimed, or dangerously wounded, in apprehending or endeavouring to apprehend such Offender, shall receive 50l. over and above any other Reward. See also 96.* 335
59. *Any Person killed in apprehending or endeavouring to apprehend such Offender, his Executors or Administrators shall receive 50l. See also 93 and 97.* 335

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FOREIGN Brandy, Rum, Arrack, &c. continued.

60. In *what Time* and *how* such Offender, by discovering *two or more* of his Accomplices, may acquit himself, and receive 50 l. for each of his Accomplices. See also 98. Page 335
61. When *two or more* passing together within *five Miles* of the Sea, or of any navigable River, shall be deemed Runners of Foreign Goods. See also 16, 56, and 89. 335
62. The Proof (in case of any Dispute) that the Duty has been paid, &c. to lie on the Persons found with the Goods. 336
63. All Persons convicted of the said Offences to be adjudged Felons, and transported for *seven Years*; and, if they return before the Expiration of that Term, to suffer Death. 336
64. All such Goods, with their Package, and all Weapons, and all the Furniture and Horses, and other Cattle and Carriages, are lost and forfeited. 336
65. Any Officer of the Excise or Customs losing a Limb or an Eye, or being otherwise maimed, or dangerously wounded, by any Offender, in the Execution of his Duty, or if any such Officer, or other Person, shall be maimed or wounded as aforesaid, in apprehending or endeavouring to apprehend any such Offender, he shall receive a Reward of 50 l. over and above all other Rewards he shall be intitled to. 336
66. Any Person killed in apprehending or endeavouring to apprehend such Offender, his Executors or Administrators shall be paid the 50 l. over and above all other Rewards they may be entitled to. See 57 and 94. 336
67. In *what Time* and *how* such Offender, by discovering his Accomplices, shall receive 50 l. for each, over and above all other Rewards. See also 95 and 98. 336
68. The Commissioners enjoin'd to cause the said several Rewards to be paid to the Person intitled thereto. See also 98. 336
69. The Commissioners are to adjust all Disputes in Relation to the Sharing of these Rewards. 336
70. When any Person, or Persons lurking, &c. within *five Miles* of the Sea-Coast, or any Navigable River, may be sent to the House of Correction, and whipped, and kept to hard Labour for *one Month*. 336
71. The Commissioners to pay 20 s. per Head to the Informer, as a Reward for every such Offender so taken. See also 94. 337
72. When such Offenders shall not be whipped, but sent to the County Gaol. 337
73. If any Person not having a Permit, or if any Hawker, Pedlar, &c. going from Town to Town, or to other Mens Houses, notwithstanding he has a Permit for the same, offer to Sale any Tea, Brandy, Rum, &c. the Person to whom it is offered, may seize it, and carry the Person before a Justice, to be sent to Prison; and the Person so seizing is intitled to *one third Part* of the Produce of such Goods. 337
74. When the Commissioners may advance the Prosecutor 1 s. for every Pound of Tea, and 1 s. for every Gallon of Brandy forfeited, till the Goods can be sold. 337

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FOREIGN Brandy, Rum, Arrack, &c. *continued.*

75. If any *Rum or Prohibited Goods* are found carrying by, or in the Custody of any *Waterman, Carman, Porter, or any other Person whatsoever*, the Offender shall forfeit *treble the Value; half to the Informer, and half to the Poor of the Parish; or be sent to the House of Correction, to be whipped, and kept to hard Labour, not exceeding three Months.* Page 337
76. All Ships arriving from foreign Parts, having on board *six Pounds of Tea; or any Foreign Brandy, Rum, Arrack, &c. in Casks containing less than sixty Gallons, (except two Gallons for the Use of each Seaman)* being found at Anchor, or hovering within *two Leagues* of the Shore, or to have been within the Limits of any Port, all her *Tea, Brandy, &c. together with the Chests, Boxes, Casks, &c. or the Value thereof, are forfeited; half to the King, and half to the Informer.* 337
77. *Foreign Goods* taken in at Sea, or put out of any Ship or Vessel within *four Leagues* of any Port of the *British Coasts*, without paying the Duties, unless in Case of Necessity, are forfeited, and the Master, &c. having Charge of such Ship, Vessel, or Boat, so *unshipping* or receiving the same, forfeits *treble the Value* thereof; and all the Vessels into which such Goods shall be unshipped, are forfeited, if their Burthen exceed not *100 Tons*, and the Master, &c. of the Ship, out of which the Goods shall be taken, forfeits *treble the Value* of the Goods so unshipped; *half to the King, and half to the Informer.* 332
78. *Offering to bribe* any Officer of the *Excise or Customs*, forfeits *50l. for every Offence; half to the King, and half to the Informer.* 338
79. All Goods found concealed on board any Ship, &c. *after the Master's Report* at the Custom-House, are forfeited; and the Master, &c. being privy to such Concealment, forfeits *treble the Value* of the Goods; *half to the King, and half to the Informer.* 339
80. *Forcibly obstructing, beating, wounding, or opposing* any Officer on board any Ship, Boat, &c. or any that shall act in their *Aid or Assistance*, shall be transported for *seven Years*; and, if he returns before the Expiration of that Term, he shall suffer Death. *See also 90.* 339
81. Any Officer of the *Customs or Excise* may go on board any *coasting Vessel*, and search all Parts of it for *uncustomed Goods*, and may remain on board during its Stay within the Limits of the Port, and any Person, molesting the Officer, forfeits *100l. for every Offence; half to the King, and half to the Informer. See also 90.* 339
82. When any Person that keeps a *Tavern, Alehouse, Victualling-House, &c. receiving, harbouring, or entertaining Offenders*, against the Laws for preventing Frauds in the Customs and Excise, shall be *disqualified* for having a new Licence, and shall also forfeit *100l. half to the King, and half to the Informer. See also 92.* 339
83. *Sheriffs, Mayors, &c. to grant Special Warrants* for apprehending Offenders against the Laws for preventing Frauds in the *Customs or Excise.* 340
84. *All Judges and Justices of the Peace* in all Trials of *Seizures* are to proceed

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FOREIGN Brandy, Rum, Arrack, &c. *continued.*

- proceed to the Merits of the Cause, without *inquiring* into the exact Form and Manner of making such Seizures. ————— Page 340
85. Officers of the *Excise and Customs*, and their Assistants, (when resisted in the Execution of their Duty) may oppose Force to Force; and if they wound, maim, or kill any Person resisting them, may plead the General Issue; and, if brought before a Justice, *shall be admitted to Bail.* [See also Appendix, 449.] ————— 340
86. Persons incurring Penalties, or chargeable with the Duties of Excise, removing out of one Jurisdiction, may be prosecuted in another. ————— 263
87. All guilty of *Smuggling* before the First of May, 1745, pardoned upon certain Conditions. ————— 342
88. *Smugglers* taking the Benefit of this Pardon, and re-offending, to suffer Death. ————— 342
89. Three or more assembled, in order to assist in Exporting *Wool*, or other Goods prohibited to be exported, or in reloading Goods exported on *De-benture* or *Certificate*, rescuing Goods after Seizure from any Officer of the Customs or Excise, or other Persons employed by, or assisting such Officer, or from the Place where they have lodged them, or rescuing any Offender apprehended, or preventing any Offender's being apprehended, to suffer Death. See also 16. ————— 343
90. Any Person having his Face blacked, or wearing any *Vizard*, *Mask*, or other *Disguise*, when passing with Goods; hindering or resisting any Officer of the Customs or Excise, &c. in seizing or securing such Goods; maiming or wounding any Officer in attempting to go on board any Ship or Vessel, or shooting at, maiming or wounding him when on board any Ship or Vessel, in the Execution of his Office or Duty, to suffer Death. See also 29, 32, 81. ————— 343
91. Offenders not surrendering in 40 Days, after the Publication of the Order of Council twice in the Gazette, or escaping after such Surrender, to suffer Death. ————— 343
92. All Persons who shall harbour, receive, conceal, aid, abet, or succour any Offender, after Publication of the Order of the Council in the Gazette, &c. to be transported for seven Years; and, if they return before the Expiration of the Term, to suffer Death. See 82. ————— 343
93. The Inhabitants of every *Rape*, *Lath*, or *Hundred*, where any Officer, in the Execution of his Office, is beat, wounded, maimed, or killed by any Offender; or the Goods rescued by Persons named as aforesaid, are to make good the Damages, and to pay to the Executor or Administrator of each Person killed 100 l. and to each Person beat, wounded or maimed, 40 l. and for Loss of Goods, 200 l. But it is provided that no Person shall recover any Damages for such Beating, Wounding, Maiming, or Loss of Goods, unless within four Days, he cause Notice to be given to two or more of the Inhabitants, and, within eight Days, make Oath before a Justice of the Peace, &c. But if the Offender is apprehended and convicted of such Offence, in six Months after the Offence committed, no *Hundred*, *Rape*, or *Lath* is subject to pay the 100 l. to the Executor or Administrator of any Person killed as aforesaid. ————— 343, 344
94. Any Person apprehending, taking, or discovering, so that he may be taken, any Offender not surrendering in forty Days, after he has been advertised

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FOREIGN Brandy, Rum, Arrack, &c. continued.

88. *Notified in the Gazette, and carrying him before a Justice of the Peace for London or Middlesex, is to be paid 500 l. by the Commissioners of the Customs or Excise respectively. See 18, 57, 71. — Page 344*
95. *Any Offender, against whom there is no Order of Council, discovering or apprehending any other Offender against whom such Order has been made, is discharged of his own Offence, and all other the like Offences, for which no Prosecution has been commenced, and is to have his Share of the Reward. See also 17, 67. — 344*
96. *Any Person losing a Limb or Eye, or being otherwise grievously wounded, in apprehending, endeavouring to apprehend, or making Pursuit after such Offenders, is to receive from the Commissioners of the Customs or Excise, respectively, 50l. over and above any other Reward he may be intitled to for apprehending. See also 58. — 344*
97. *Any Person killed in taking, apprehending, or endeavouring to apprehend, or in making Pursuit after such Offenders, his Executors or Administrators are, upon making Proof, to receive 100 l. of the Commissioners of the Customs or Excise respectively. — 345*
98. *Any Offender (at any Time before the King's Order in Council be made for his Surrendering in forty Days) discovering two or more of his Accomplices to the Commissioners of the Customs or Excise, and apprehending them, or causing them to be apprehended (if they are convicted of the Offence) shall receive 50 l. of the Commissioners of the Customs or Excise for every such Offender, and be himself acquitted of his Offence, and all like Offences, for which no Prosecution has been commenced. See 60, 67, 68. — 345*
99. *When Ships are seized for illegal Practices, the Defendant is liable to no Costs of Suit, if there was a probable Cause of Seizure. 345, 346*
100. *Persons sued for seizing Goods as prohibited or illegally carried, or exported, or intended or attempted to be exported or illegally reloaded, if there was a probable Cause of Seizure, the Defendant liable to no Costs of Suit, and but to Two Pence Damage, nor to be fined more than one Shilling. 346*
101. *The Form of an Order of Council for a Smuggler to surrender himself in forty Days. — 346*
102. *The Attorney and Solicitor General's Opinion concerning Seizing and Apprehending Smugglers, as delivered to the Lords Commissioners of his Majesty's Treasury, 1747. — 347, 348*

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FORFEITURES, { See Brewers, Cyder, Distillers, Foreign Brandy, Mead-
FINES, { makers, Seizures, Vinegar-makers, and Glass-makers,
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 2. The Duties on all *British-made* Glafs; how to be collected; and where paid. 388, 389
 3. Glafs-makers to make proper Entry of their Utensils, &c. and give proper Notice, or forfeit 50 l. *half* to the King, and *half* to the Informer. 389
 4. The Officer must have Admittance at all Times. *See* No. 8. 389
 5. ——— to make a *Report*, and leave the Maker a *Copy*, or forfeit 40 s. to the Maker. 390
 6. Glafs-Makers, by whom to be sworn. 390
 7. ——— to keep *Scales* and *Weights*, and assist the Officer; or forfeit 50 l. *half* to the King, and *half* to the Informer. 390
 8. *Obstructing* the Officer, to forfeit 50 l. for every Offence; *half* to the King, and *half* to the Informer. 390
 9. Glafs-Makers in *London* and *the Country*, when to make Entry, or forfeit 20 l. *half* to the King, and *half* to the Informer. 390
 10. To make Entry on Oath: The Oath to be administered by the Officer: Where Entry must be made. 390
 11. When the Duties must be paid, or forfeit *Double* the Value; *half* to the King, and *half* to the Informer. 391
 12. Who may *export* Glafs, and when it is forfeited: *The Drawback* on Exportation. 391
 13. No *Foreign* Glafs to be imported into *Ireland*, under very severe Penalties. 391
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37, 38, 40. See Distillers, 71, 98.

[See Appendix, 444, 445, also from Page 241 to 250, both inclusive.]

JUSTICES of the Peace.

1. Two Justices residing near the Place where any Forfeitures are made, or Offence committed, are to hear and determine all Matters relating to the Excise (unless it be within the Limits of the Chief Office in London.)

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2. They have Power to summon the Offender; to examine the Matter upon Oath; to give Judgment; and by Sale to levy the Forfeiture on the Offender's Goods; and for want of Distress may send him to Prison. — 252

3. They may mitigate Forfeitures. — 252

4. Are impowered to summon Evidences and fine them. — 255, 357

5. But, if the Justice neglect or refuse to act for 14 Days, the Sub-Commissioners may hear and determine the same. — 252

6. Justices are to meet once a Month, to determine Matters in relation to the Excise. See Distillers, 31, 64. — 255

6*. May summon any Excise Officer to prove an Entry, where any one is suspected to sell Exciseable Liquors without a Licence. — 298

7. Are to certify the Officers taking the Oaths at the next Quarter-Sessions. — 298

8. To determine as to bribing Officers. — 298

9. To administer an Oath to those who are to compute the Contents of Brewing-Vessels, &c. — 253

10. To determine as to Commissioners and Officers taking Fees but from the King, &c. — 254

11. Their Power in relation to the fixing and sealing Retail Pots, &c. 262

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13. They have the same Power over Retailers of Brandy and Spirituous Liquors, as over Victuallers, &c. — 293, 298, 301

14. Are to certify where any Person is kill'd in taking or endeavouring to take a Smuggler. — 336

15. May impower Officers to break open Doors, &c. to search for and seize private Stills, Backs, &c. — 292

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23. May commit any Hawker or other Trading Person, that offers Tea, Brandy, Rum, Arrack, &c. to Sale, whether he has a Permit or not. _____ 337

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N. B. "These Traders are to make Entry and pay off the Duty as Inn-keepers and Victuallers, and Retailers of Beer and Ale, and are subject to much the same Survey, Prohibitions, &c. as may be seen in Page 250, &c. of Chapter IV."

1. Hiding, concealing, or conveying away from the Sight or View of the Gauger, forfeit 5s. per Gallon; three fourths to the King, and one fourth to the Informer. 282
2. Refusing to let the Gauger enter their House or other Place, and take an Account of their Goods, forfeit 15 l. for every Offence; three fourths to the King, and one fourth to the Informer. [See Appendix, 440, 452.] 282

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MELASSES. See Brewers, 22, 23, 24.

MIS ENTRY, when it is not penal, Page 253. When it is penal, Page 256. [See Appendix 446.]

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11. Ditto ————— Malt and Corn-Wash. ————— 294
12. Ditto ————— Cyder and Perry-Wash. ————— 294
13. Officers of the Excise obliged to give Permits or Certificates *Gratui*, with Brandy, &c. sold in entered Places. ————— 295
14. When resisted, may oppose Force to Force; and, if they kill, shall be admitted to Bail. ————— 340
15. May go on board Ships, &c. to search for and seize such Goods as are feizable by Law, Page 329. See Distillers, 3, 4, 9, 14, 16, 21, 22, 23, 27, 37, 38, 39, 42, 44, 50, 55, 56, 58, 59, 60, 64. Foreign Brandy, 3, 26, 29, 30, 31, 32, 45, 47, 48, 50, 65, 68, 90. Cyder, 5. Vinegar-makers, 2, 8. Sweets, 1, 7. Mead, 1, 2.
- 15*. May swear Glass-makers. ————— 390

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16. Not leaving Weekly with common Brewers a Copy of the Return they made to the Commissioners, forfeit 40 s. one third to the King, one third to the Poor of the Parish, and one third to the Informer. 253
17. Not attending at the Excise-Office on Market Days at proper Hours, forfeit 80 l. half to the King, and half to the Informer. — 253
- 16*. Not leaving with Brewers and Retailers Notes in Writing of their last Gauges, forfeit 40 s. three fourths to the King, and one fourth to the Informer. — 253
- 17*. Not leaving with common Brewers (if it be demanded) when they take their Gauges, Notes of each Gauge, setting forth the Inches and Tenths of the Backs, and the Worts of the Tons, and Quality of the Liquor, forfeit 40 s. and Costs of Suit; half to the King, and half to the Informer. 258
18. Not leaving with the Brewer or Retailer (within 3 Days after the End of every Week) a Copy of each respective Charge, forfeit 10 l. half to the King, and half to the Informer. — 257, 258
19. Charging any Brewer or Retailer with more than such Copy contains, forfeit 10 l. half to the King, and half to the Informer. 258
- 19*. N. B. By an Act of the 12th of Geo. I. no Officer or Gauger is subject to any Penalty for not leaving a Copy of his Charge, unless the Trader requires and demands it in Writing. — 333
- 19†. Not leaving Glass-makers a Copy, forfeit 40 s. to the Maker. 390
20. Being bribed or corrupted, forfeit 10 l. one third to the King, one third to the Poor of the Parish, and one third to the Informer. — 254
21. Endeavouring to persuade or dissuade any Elector in Voting for a Member of Parliament, forfeit 100 l. half to the King, and half to the Informer; and are disqualified for any Employment in the Excise, or any Office of Trust under the Crown whatsoever. — 250
22. Taking or Demanding any Money or Reward for Bonds or Receipts relating

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- lating to the Excise from any other Person than the King, forfeit their Office, and also 10 s. for every Offence. — Page 254, 256
23. *Conniving* or being concerned in any clandestine Importation of French Brandy, or concealing the same, forfeit 500 l. half to the King, and half to the Informer; and are disqualified for every Employment in the Excise. — 325
24. Dealing in Coffee, Tea, Brandy, or Exciseable Liquors, forfeit 50 l. to the Informer, and are disqualified for any Employment in the Excise. 333
25. The Officer knowingly charging Low Wines as drawn from malted Corn, when in Fact it is not, forfeit 10 s. per Gallon; half to the King, and half to the Informer, and likewise his Office. — 291
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- 25*. May take a Sample of Low Wines and Feints, paying for it. 309
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- OPPOSING Officer. See obstructing Officers.
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- PERMITS. See Certificates.
- PIPES. See Brewers, 8, 9, 26, 36. Distillers, 21, 22, 23.
- PORTERS carrying run Goods. See Foreign Brandy, 75.
- PROCEEDINGS (before the Commissioners and Justices) to be in English.
- PROOF. See Officer, 6, 7. Evidence and Witnesses. [See Appendix 445, 449.]
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- REFUSING the Officer to enter, &c. See Brewers, 29, 37. Distillers, 4, 9, 10, 37, 60. Foreign Brandy, 80. Cyder, 2. Vinegar, 8. Sweets, 7. Mead, 2. Glass-makers, 8. [See Appendix, 452, 454.]
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" and Victuallers, and Retailers of Beer and Ale, and are subject to much
" the same Survey, Prohibitions, &c. as may be seen in Page 250, &c. of
" Chapter IV."

1. **Hiding, concealing, or conveying away from the Sight and View of the Gauger, forfeit 40 s. per Barrel, three fourths to the King, and one Fourth to the Informer.** Page 282

2. **Erecting, or using any sleeping Tub, or other Vessel for making or keeping Sweets, without giving Notice, forfeit 50 l. half to the King, and half to the Informer.** 321

3. **What Liquors shall be deemed to be Sweets, and who shall be deemed to be Makers thereof.** 322

4. **Removing Sweets (tho' they have paid the Duty) without a Permit, both the Maker and Receiver forfeit 10 s. per Gallon; half to the King, and half to the Informer; and likewise the Sweets and Casks so removed.** 322

5. **Not giving Notice to the next Excise-Office, of their Names, Place of Abode, and of the Places used by them for making or keeping Sweets, forfeit 20 l. half to the King, and half to the Informer.** 324

6. **Sweets or made Wines not to be sold to be drank in their Houses, without a Licence from two Justices of the Peace.** 323

N. B. **Wines made from the Juice of British Grapes only by the Owner or Occupier of the Vineyard, are not chargeable with any Duty.**

7. **Refusing to let the Gauger enter their House or other Place, to take an Account of their Goods, forfeit 15 l. for every Offence; three fourths to the King, and one Fourth to the Informer.** 282

8. **At what Hours only they shall sell, deliver, or carry out Sweets, on Forfeiture of 40 s. per Barrel; half to the King, and half to the Informer.** 322

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N. B. "These Traders are to make Entry and pay off the Duty as Inn-keepers and Victuallers, and Retailers of Beer and Ale, and are subject to much the same Survey, Prohibitions, &c. as may be seen in Page 250, &c. of Chapter IV."

1. What shall be deemed Vinegar, and Liquors preparing for Vinegar. Page 321
 2. Hiding, concealing, or conveying away from the Sight and View of the Gauger, forfeit 40s. per Barrel; three Fourths to the King, and one Fourth to the Informer. 282
 3. Selling, delivering, or carrying out, Vinegar at unlawful Hours, forfeit 40s. per Barrel; three Fourths to the King, and one Fourth to the Informer. 321
 4. Not showing the Officer any Liquors he receives, before he mixes them with any other Liquors or Materials, forfeits 20l. for every Offence; three Fourths to the King, and one Fourth to the Informer. 321
 5. Using any private Storehouse or other Place, forfeit 50l. for every Offence; half to the King, and half to the Informer. 321
 6. Receiving or delivering out (without Notice) any Liquor proper for Vinegar but at certain Hours, forfeit 50l. for every Offence; half to the King, and half to the Informer. 321
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- UTENSILS. See Brewing Vessels.

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